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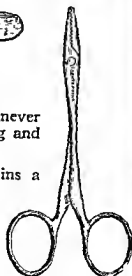
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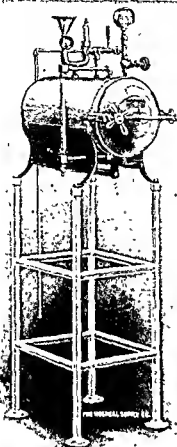
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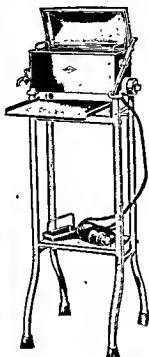
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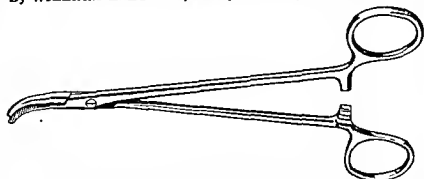
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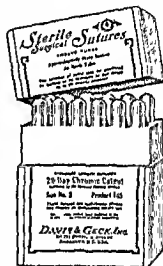
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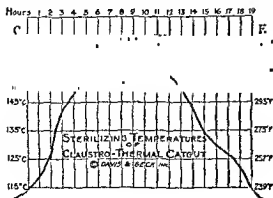
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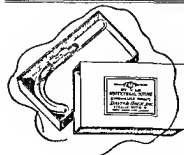
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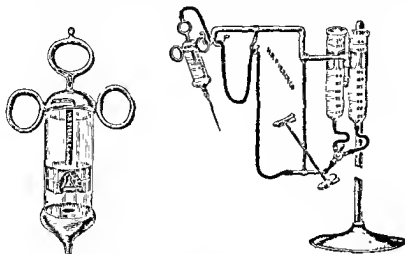
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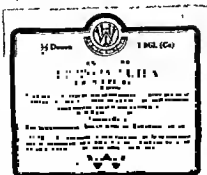
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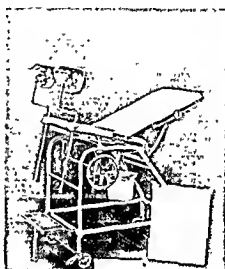
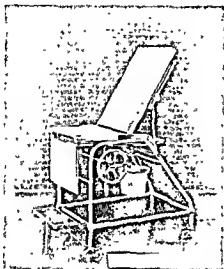
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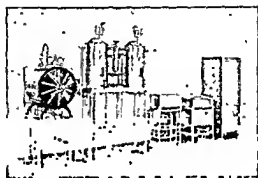
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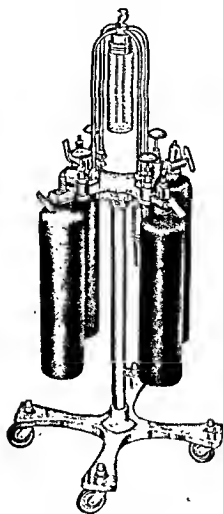
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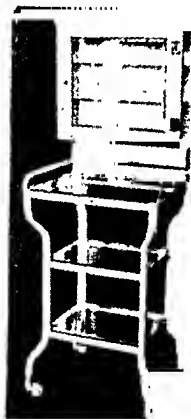
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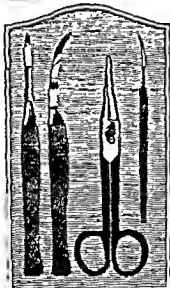
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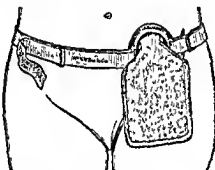
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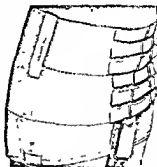
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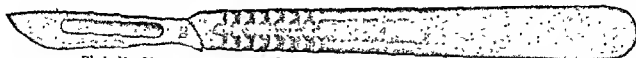
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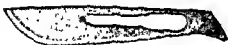
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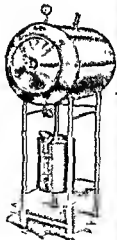
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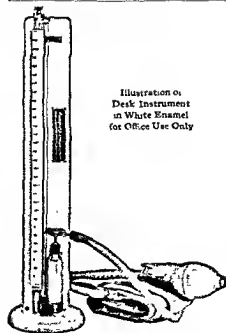


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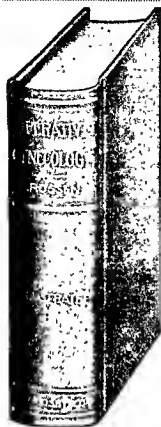
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Fig 39

Fig 40

Fig 41.
Case 25

Fig 42

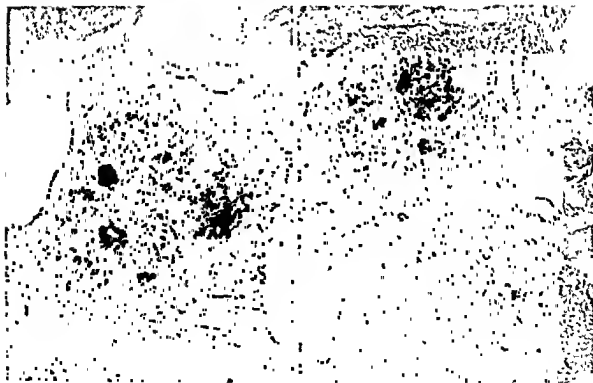


Fig 43

Case 25.

Fig 44

*(Roentgenographic Appearance, Diagnosis, and Pathology of Some Obscure Cases of Bone Lesions —
Robert W. Lovett and S. B. Wolbach)*

SURGERY, GYNECOLOGY AND OBSTETRICS

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ROENTGENOGRAPHIC APPEARANCE, DIAGNOSIS, AND PATHOLOGY OF SOME OBSCURE CASES OF BONE LESIONS*

BY ROBERT W. LOVETT, M.D., AND S. B. WOLBACH, M.D., BOSTON

The publication of this work has been made possible by the Helen Hattitt Thompson Fund for Research

FOR the past five years the writers have been concerned in a conjoined study of certain obscure bone lesions, occurring in the orthopedic service of the Children's Hospital. In cases where the diagnosis of a bone lesion was in doubt, the pathologist has been present when operations were to be performed, and has taken his own specimen when the bone was opened, so that if possible an immediate diagnosis could be made by frozen section, and the operative wound treated accordingly. When the pathologist could not make a diagnosis in this way, the specimen was taken to the laboratory, studied, and reported on later.

The cases presented are those in which there was, in the minds of the writers, doubt as to the correct diagnosis from the X-ray and other data available before operation. Each case will be presented with a short clinical history, an X-ray, and a pathological report.

The writers are indebted to Percy Brown, radiologist of the Children's Hospital, for co-operation in the study, and to John J. Morton, of Boston, also a hospital associate, for much labor in the collection and arrangement of the data.

Considering the behavior of bone in general, as studied by the X-ray, it seems to be a structure of very limited reaction to pathological conditions. Regarded from this point of view, there seem to be only three reactions

possible in bone. These are: (1) atrophy or diminution in lime content; (2) destruction of bone tissue, local or general, (3) a formative process, characterized by formation of new bone, or a condensation of existing bone around a focus of disease.

The general point of view with regard to these processes has been that tuberculosis is largely destructive in character; that the destructive action is, as a rule, general; that tuberculosis is characterized by marked atrophy of the affected bone, with perhaps atrophy of contiguous bones in the same limb; and that it occurs in the region of the epiphysis.

Osteomyelitis has been generally regarded as a process at first destructive in character, and then formative, the formative process generally becoming dominant.

Syphilis has been considered as the most purely formative of the three processes, with some element of destruction, but much more formative than either of the others mentioned.

When the writers attempted to study, from the point of view of pathological findings, X-rays taken of cases prior to operation, it became evident that this criterion could not be depended upon; that tuberculosis, which has ordinarily been spoken of as occurring in the articular ends of bones, might occur in the shaft, and that it might be almost a purely formative process, or that the formative

*From the Orthopedic Clinic of the Children's Hospital and the Department of Pathology of the Harvard Medical School.



Fig 1, Case 1

process might exist with the destructive process, and ultimately become dominant, and that a local destructive process, indistinguishable from the so-called Brodie's abscess, might occur in a pure tuberculosis, so that a localized cavity in bone, well walled off, might occur in this disease. It appeared also that a wedge-shaped destruction in the articular end of the bone, with the base of the wedge toward the joint, might occur both in tuberculosis and osteomyelitis, and that under these circumstances the two were practically indistinguishable. The errors in diagnosis, in the experience of the writers, have more often consisted in mistaking tuberculosis for other things than in mistaking other things for tuberculosis. A curious punched out lesion of the skull was identified pathologically in two cases as being definitely tuberculosis. The other confusion which was most troublesome between tuberculosis and

two tibiae to be very similar in syphilis and osteomyelitis.

As it has appeared to the writers, the problem of differentiating the three conditions mentioned by means of the X-ray, is not encountered, as a rule, in the routine case in which a purely destructive lesion is most often tuberculosis. The lesion of rapid destruction, with marked formative activity, is generally osteomyelitis, and the purely formative process is most likely to be syphilis. The serious problem of differential diagnosis occurs most often in cases in which focal lesions are present, in which the phenomena of formative and destructive activity have become so mixed that without the pathological examination, in many of them, the diagnosis is impossible. The advantage of such a diagnosis made during the operation is evident to any surgeon, because it guides him in the treatment of the bone cavity, and is often the direct factor in deciding whether or not to close such a cavity.

In addition to the three conditions of tuberculosis, osteomyelitis, and syphilis, certain other bone lesions are shown, which have a bearing on the question of diagnosis.

A short summary of the case histories will be presented, the salient pathological facts discussed, and conclusions drawn as warranted.

CASE 1 Tuberculosis. J. Z., age 3½ years, first seen in the out-patient department of the Children's Hospital on July 30, 1913. Complaint swelling of ankle, pain at times, lameness.

Examination showed the right ankle swollen, fluctuant, with limited motion. X-ray examination revealed a large area of absorption at the lower end of the tibia, extending part way through the epiphyseal cartilage (Fig 1, Case 1). A plaster cast

“

swelling is globular, not tender, not reddened. One inch above, and slightly external to the external malleolus, there is the remains of an old sinus which has now closed. There is marked limitation in the movement of the ankle-joint. The reflexes are normal. There is one-half inch lengthening of the right leg.

seen to be in X-ray appearances practically identical. Again, the stage of repair in osteomyelitis may be seen in the X-ray of

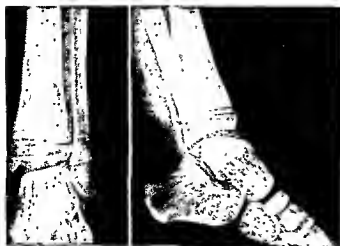


Fig. 2.

Fig. 3.

Case 2.

Operation, February 21, 1914, by Dr. Lovett. Through an incision a piece of cortex was removed and sent for frozen section examination. The cavity of the bone was explored and much caseous material discovered and curetted.

Pathological report. Tuberculosis.

CASE 2 Tuberculosis. N. G., age 5 years, admitted to the Children's Hospital November 15, 1916. The family and past history is unimportant.

Present illness The patient fell on the ice one year ago injuring the left ankle. The ankle has been swollen and painful and tender to pressure. There have been no night cries, and no loss of flesh.

Examination. There is slight adenopathy in the groins and the neck. A healed ulcer is seen over the head of the left radius; two healed ulcers over the lower end of the right femur on the lateral surface; two over the medial surface of the right calf, one over the left thigh, lateral aspect. The left ankle is limited in motion in dorsi and plantar position, and there is slight lateral mobility. There are two scars in front of the external malleolus and a discharging sinus in the space between the external malleolus and the tendo achillis.

The temperature on admission was 99°. The patient has an evening rise of temperature to 99.5 and 100°. The pulse averages 90. White blood corpuscles 9200. The urine is normal, von Pirquet positive in 18 hours. Wassermann not done.

X-ray examination shows a destructive process at the lower end of the tibia extending close to the epiphyseal line; marked bone atrophy, and no periosteal reaction (Figs. 2 and 3, Case 2.)

On November 23, 1916, the leg was put in a plaster cast.

Operation December 1, 1916, by Dr. Thorndike. The cavity in the tibia was curetted and snippings handed to Dr. Wolbach for diagnosis. One of the superficial skin ulcers on the right thigh was excised for microscopic examination.

On December 7, 1916, the patient was discharged to Wellesley, in plaster.



Fig. 4

Fig. 5.

Case 3

Pathological report, December 7, 1916, by Dr. Wolbach. Tuberculosis of the skin. Tuberculosis of bone.

CASE 3. Osteomyelitis. H. K., age 10 years, admitted to the Children's Hospital, January 6, 1917. The family history is negative. The patient had measles at 3.

Present illness In the leg and left leg has been swollen and red. Two days ago it was better and the patient was up and around. Yesterday it was worse, and he suffered much pain, an

local condition. The leg was swollen. No motion permitted. The foot was held in 30 degrees plantar flexion. There was fluctuation posterior to both malleoli. Pressure causes pain. The von Pirquet was negative in 48 hours, negative in 60 hours, the bovine test was positive in 36 hours. The urine was normal. White blood corpuscles numbered 17,800.

X-ray examination discloses a destructive process of the lower end of the tibia extending through the epiphyseal line. There is no thickening of the bone (Figs. 4 and 5, Case 3).

Operation, January 24, 1917, by Dr. Lovett. Sequestrotomy. On February, 1917, the patient was discharged to Wellesley, in bivalved cast.

Pathological report, Dr. Wolbach. Granulations and cicatricial tissue from medulla of bone.

CASE 4. Osteomyelitis. E. R., age 10, seen first in the Out-Patient Department of the Children's Hospital, July 18, 1916, at which time the patient complained of pain in right leg. The pain had been worse at night for one year. The patient was admitted to the hospital, January 16, 1917.



Fig 6



Fig 7

Case 4

The father died of tuberculosis. One brother is suspected of having tuberculosis of the knee. Otherwise the family history is negative.

The patient had whooping cough 4 years ago, mumps 4 years ago, measles 2 years ago, abscesses on neck 7 years ago, tonsils removed 1 year ago,

limp and centered in the ankle. He lost some weight, was tired, and had headaches.

There is no redness, local heat, or sense of fluctuation. The bone surface does not feel rough.

The von Pirquet was negative in 12 hours, positive in 24; Wassermann negative. White blood corpuscles 9900. The urine is normal. The patient runs a temperature from normal to 100° with afternoon

absorption
siderable

Operation, January 25, 1917. An incision was made and a hole bored into the fibula. This led

with irregular arrangement of trabeculae. The interstices contain chiefly loose textured fibrous tissue in which are a few fat cells. There are no acute lesions. Diagnosis: late repair of bone.

CASE 5. Syphilis. F. M., age 5, admitted to the Children's Hospital, October 13, 1917. The maternal grandmother died of tuberculosis of the lungs. The mother had one miscarriage at 3 months, 3 years after birth of the patient. Otherwise the family history is negative. The patient had pneumonia at

tightly. She said she bumped her foot against the bed. She had no limp. The foot gets sore on exer-



Fig 8



Fig 9.

Case 5

cise. She has been in bed for a week. She has had no fever, and the pain is not worse at night.

Examination. The right cornea has an ulcer. There is crusting of the anterior nares, and induration of the left tonsil. The glands are enlarged on both sides of the neck. The epitrochlears are not enlarged. Knee-jerks are exaggerated. The ankles and lower quarter of both legs are some enlarged. There is a bony thickening of both fibulae, more marked on the left. There is considerable oedema of tissues over the lower end of left fibula, and questionable fluctuation 2 inches above the external malleolus. There is no tenderness. There is apparent thickening of the anterior border of the left tibia. There is no marked roughening. The circumferences of the thighs and calves are the same. The circumference of the left ankle is 6.5 inches, and of the right 6 inches. There is slight contraction of the adductor muscles.

White blood corpuscles 11,300. The von Pirquet is slightly positive in 18 hours. The Wassermann is positive. The urine is negative. Temperature as high as 101° , but usually around 99° to 99.5° . Pulse averaged 80.

X-ray examination shows a destructive process involving the lower end of the fibula not extending through the epiphysis, with very little bony thickening (Figs. 8 and 9, Case 5).

October 19. Case thoroughly studied and diagnosed both by X-ray and positive Wassermann to be that of syphilis of the bone. The patient was started on mercury treatment, and discharged to out-patient department.

July 10, 1918, re-admitted to house. Dr. Soutter, who has been following the case, thinks the processes are increasing. Examination shows hard area about 2 inches in diameter over internal left malleolus.

Operation, July 13, 1918, by Dr. Sever. An incision was made, the periosteum incised, and bone exposed. The periosteum was much thickened. The bone was opened into the medullary cavity, and a small amount of pus evacuated. The cavity was packed with gauze, and the wound closed with drainage.

July 23, 1918, no report has been received from specimen of bone curetted out of fibula.

July 31, the patient was discharged home, in plaster cast.



Fig. 10, Case 6

CASE 6 Tuberculosis E. A., age 2 11/12 years, admitted to the Children's Hospital, August 13, 1918. The family and past history is unimportant.

Present illness Two years ago the patient fell down stairs. The ankle swelled, and has remained swollen ever since. He was unable to walk or sit for several months, then got so he could walk, but limped all the time. One month ago the mother noticed that the ankle was becoming reddened and swollen on the outer side. He has not walked on it since. He wakes frequently at night crying with pain in ankle.

Examination There were several areas of skin eruption over the left chest and back, consisting of small blisters and serous crusts, surrounded by slightly indurated edges. The right ankle is generally swollen and there is a large fluctuant reddened swelling, the size of a walnut, over the external malleolus, which is tender on pressure. There is local heat present. The motions of the ankle are slightly limited.

Temperature of the up and-down type. Afternoon rises to 100°. Pulse 110 to 120. The urine is normal. Von Pirquet negative in 48 hours. White blood corpuscles 14,000.

X-ray examination shows destructive lesion of the lower end of the tibia with marked bone atrophy. Part of the epiphysis is destroyed and there is increased density over the ankle-joint (Fig 10, Case 6).



Fig. 11, Case 7

Operation, August 16, 1918 by Dr. Lovett An incision was made over the abscess. A small amount of pus escaped. The abscess connects with the ankle-joint. The outer surface of the astragalus is found eroded. Several small pieces of granulation tissue were taken for immediate diagnosis. Dr. Wollbach examined them and reported tuberculosis. The wound was closed without drainage.

August 15, Dr. White reports skin lesions are impetigo contagiosa. September 5, 1918, discharged home, in plaster cast.

CASE 7 Syphilis E. D., age 6 2/12 years, admitted to the Children's Hospital, August 12, 1918. The family history is unimportant. The patient was a normal child. He had whooping cough 3 weeks ago, mumps 1 year ago. Fifteen months ago he fell off of a high ice chest. The next day he had pain in the left knee and walked with a limp. The knee showed fluid in the joint (examined at the Children's Hospital January 27, 1917. Advised rest for a week.) On July 7, 1917, X-ray examination showed a focus in the tibia, line of epiphysis, and he was recommended to the hospital. During the last week he has complained of pain in the shin.

Examination. The inguinal glands are enlarged. There is a slight swelling over the upper third of the left leg, more marked local swelling on the inner side one-half inch below the knee-joint. There is tenderness over this area and the upper third of the tibia.

Temperature 99°, with afternoon rises to 100°. Pulse averages 110. The urine is normal. White blood corpuscles 12,000. The von Pirquet test is negative in 48 hours, the Wassermann test is positive.

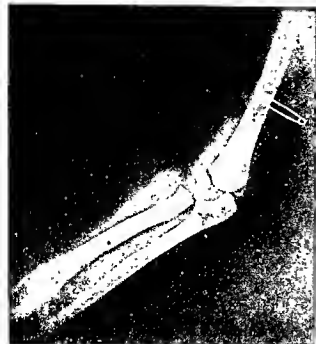


Fig. 12.

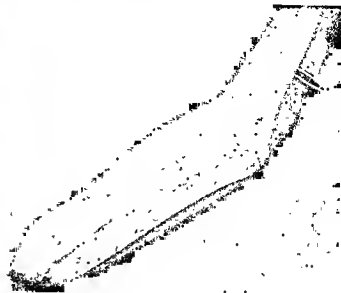


Fig. 13

Case 8.

X-ray examination shows a destructive process in the upper end of the left tibia extending to but

There is no cortical (Case 7).

Dr. Lovell. An incision just below the knee.

The periosteum was found to be lifted from the bone for an area of about 1 square inch. An incision was made through the periosteum, opening into a

wound was closed with drainage.

September 5, 1918, discharged to Wellesley.

CASE 8. Tuberculosis. M. H., age 3 11/12 years, admitted to the Children's Hospital, July 5, 1916. The mother has tuberculosis; is living in Mattapan Hospital for tuberculosis. The father and four other children are living and well. The patient is cross eyed. She has had measles and whooping cough. She had impetigo contagiosa on the face, when examined in May, 1914.

Present illness. In May, 1914, had impetigo and was treated in out-patient department. In May, 1915, she had sores on both arms, which had been present for 3 months, breaking down a week before coming to the dispensary. There was no pain and no fever. On the right wrist there was an ulcer which was deep in the tissues, 3 to 4 centimeters in diameter, but not involving the bone. There was a fluctuant tumor of the left elbow. The Wassermann was negative. In June, 1916, there was a large pustular, indurated swelling at the right wrist, which was tender. July, 1916, X-ray showed osteomyelitis of the right radius.

Examination The child is normal except for the local condition. There are ulcers on the right and left forearm at the elbow and the lower end of the radius. The area about the ulcers is reddened and indurated. The lower end of the right radius is greatly thickened. All the ulcers discharge a thin yellow pus.

Temperature 99° to 100.5°. Pulse 100. The urine is normal. White blood corpuscles 16,800; polymorphonuclears 77 per cent; eosinophiles 1 per cent; large mononuclears 6 per cent, small mononuclears 16 per cent. The von Pirquet is positive in 24 hours. The Wassermann is negative.

X-ray examination shows a loss of substance in the lower third of the radius with considerable cortical thickening and periosteal reaction (Figs. 12 and 13, Case 8).

Operation, July 18, 1916, by Dr. Legg. The radius was opened, and the bone cavity filled with granulation tissue, curetted. The wound was closed with drainage.

Pathological report The section includes tuberculous granulation tissue and a few necrotic bone trabeculae. The granulation tissue contains large areas of caseation, portions show considerable fibrosis; so that while progressive the process is not very active.

CASE 9. Osteomyelitis. L. W., age 7, admitted to the Children's Hospital, August 15, 1918. The family history is negative. The child suffered a burn on the left shoulder when she was 2 years of age; she had an abscess of the left forearm in August, 1917; and she has had abscesses on the right hand and the left hip. She had measles one and a half months ago.

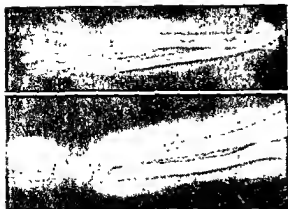


Fig 14 (above) and Fig 15, Case 9

Present illness Ten days ago the left wrist commenced to swell. About five days ago it became very painful, red and hot. The child has not felt very sick.

Examination There is a scar of an old burn about the left shoulder. There is marked general swelling of the lower half of the left forearm and hand. The skin is shiny, tense, and reddened. There is a marked local heat and marked tenderness over the whole lower half of the forearm. No pitting on pressure. There is a scar 1 inch long on the thumb side of the forearm, just above the wrist. Deep fluctuation is present, and limitation of motion of the wrist. The right hand shows a scar one-half inch long on the extensor surface at the base of the third finger. There is a scar 1 inch long in the left groin.

The temperature was 101° on admission. Pulse 120. There is no record on any special examinations in the history.

X-ray examination shows marked destruction of tissue at lower end of radius with some periosteal juxta-epiphyseal proliferation (Figs 14 and 15, Case 9).

Operation, August 16, 1918, by Dr. Lovett An incision was made on dorsal surface on forearm over the lower end of the radius. The bone was exposed. The periosteum was much thickened. The bone was opened and found so soft that it cuts almost like cheese. Considerable pus escaped from the abscess cavity, which was apparently about 1 inch long. The wound was closed with drainage. August 29, the patient was discharged home with very little discomfort.

Pathological diagnosis Osteomyelitis

CASE 10 Osteomyelitis. E. B., age 2 9/12 years, admitted to the Children's Hospital, December 9, 1918. The family history is unimportant. The patient had measles one year ago, and an abscess was operated upon outside, September 16, 1918; otherwise the past history is negative.

Present illness An abscess appeared about a year ago, subsided, came back, and stayed. It was thought to be a cyst and ointment was applied, but the

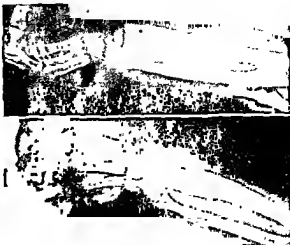


Fig 16 (below) and Fig 17, Case 10.

trouble got no better. The patient was operated upon at another hospital, September 16, 1918, and at this time the mother was told that it was probably a tuberculous abscess.

The temperature was normal on admission, of the up and down type, with rises in the afternoon to 100°.

Pulse 80 to 110, following temperature. The von

Operation, December 17, 1918, by Dr. Legg The sequestrum was removed. The wound drained.

Pathological report Dr. Walbach. The seques-

in

admitted to the Children's Hospital, March 25, 1919. The family history is negative. The patient had measles, scarlet fever, and whooping cough, otherwise normal.

Present illness Three years ago there was a swelling of the right wrist, 6 months later there was a large ulceration at the outer side of the left knee. The patient was operated upon in New Hampshire, November 17, and remained in hospital for a month. The knee healed. In July, 1918, the right wrist and also the elbow became swollen and tender. Since operation, in November, 1918, has had to have almost daily dressings.



Fig. 18, Case 11.

Examination. The patient is a poorly nourished, anæmic child, normal except for local trouble. The right forearm is enlarged. At the elbow-joint is an ulcer about 3 inches in diameter, with regular, sharp edges and exuberant granulations, greenish looking and soft. The discharge is not profuse. On the lower third of the forearm on the ulnar side is another ulcer about 2 inches in diameter, freely discharging, gangrenous in the center. Below this ulcer there is a soft, fluctuant, slightly tender swelling. Motions of the elbow-joint markedly limited. Temperature normal. Pulse 80 to 90.

The Wassermann is positive; the von Pirquet negative. The mother's Wassermann is reported positive. White blood corpuscles 9400. The urine normal.

X-ray examination shows considerable destruction and bony overgrowth of both ends of the ulna, with marked periosteal proliferation (Fig. 18, Case 11).

April 3. Antiluetic treatment started. Dr. Wolbach has seen the case and considers it probably gumma. He did not think it would be worth while to look for spirochæta, but requested snippings of granulations of tissue in 10 per cent formalin to be stained by Levaditi's method.

April 18. Local condition shows moderate improvement.

April 24. The patient was seen in consultation by Dr. Morton Smith and a diagnosis of specific, syphilitic infection made.

May 16. Local condition has cleared up considerably. The patient was given neodiarsenol twice, 150 milligrams each dose.

July 15, 1919. The patient was discharged. Dr. Wolbach reports that the granulation tissue examined April 3 is negative for spirochæta.

Pathological report by Dr. Wolbach. The material consists of granulation tissue without destructive features. Satisfactorily impregnated blocks by Levaditi's method were negative for spirochæta.

CASE 12. Bone cyst. M. H., age 7 years, admitted to the Children's Hospital, October 11, 1918. The family history is negative. The patient had whooping cough at 2 years of age, measles at 5, mumps at 5; otherwise nothing abnormal.

Present illness. Two years ago the patient fell and injured his left hip. He could not walk until the next day. Three months after the injury he

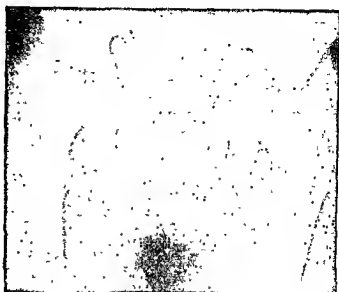


Fig. 19, Case 12.

began to limp and complained of soreness of the left thigh. He had attacks of limping which lasted for a week at a time, and intervals between attacks, during which he had no symptoms whatever. In the last 2 months the condition has become worse, the patient complaining of soreness and tenderness in the left groin. At no times have there been any night cries or swelling. There has been no position of the limb favored by the patient. The general health has been excellent.

Examination. The findings were negative except for local condition. Local examination shows that the patient walks with a fairly well marked left-sided limp, the trunk being inclined toward the left side. On standing there is a slight lateral deviation of the spine to the left. The left shoulder is below and behind the right. There is no rotation on the posterior aspect of the thigh. There is a very slight fullness at the outer end of the left gluteal fold. There is no perceptible difference in the size of the two legs. The measurements are practically the same. There is a slight thickening just below the great trochanter, posteriorly. There is a limitation of about 10 degrees in flexion and in abduction. The knee-jerks are present, and slightly increased on the left.

The temperature ranged from 101° to 102.4°. The von Pirquet reaction is negative. Wassermann reaction negative.

X-ray examination shows a bone cyst at the upper third of the left femur (Fig. 19, Case 12).

Operation, October 24, 1913, by Dr. Lovett. An incision was made just below the great trochanter of the femur. A hole was made into the marrow cavity, and a piece of bone about one-half inch by three-quarters of an inch, by one-eighth of an inch in thickness was removed from the cortex. With the removal of this bone, there was an escape of thin, blood-stained serum, leaving a cavity two and three-quarters, by one and one-quarter, by one inch. This



Fig. 20, Case 13

cavity was not lined by any membrane. The walls were hard and smooth. Closure without drainage.

November 19. The patient was sent to Wellesley, in plaster cast. Convalescence uneventful.

Pathological report: Bone cyst

CASE 13. Chondrosarcoma. E. M., age 5 4/12 years, admitted to the Children's Hospital, September 28, 1915. The family and past history is unimportant.

Present illness: About one year ago the patient began to suffer with pain in the left thigh. The pain was not severe, but described as a slow ache. She would grow tired very easily on the slightest exertion. She had a lump.

Examination: The patient is normal except for local condition. She walks with slight left-sided limp. There is a slight limitation in all external motions of the left hip. There is 3/8 of an inch lengthening of the left leg, and considerable thickening of the upper end of the femur.

The temperature is normal. Pulse about 90. The urine shows slight amount of acetone. The von Pirquet and Wassermann were not done at this time.

X-ray examination shows a punched-out process with areas of absorption involving the upper half of the shaft of the femur.

row was found to be a pearly gray color, and as much of this as possible was curetted out. The wound was closed with a small drain.

Pathological report by Dr. Wolbach. Chondrosarcoma.

October 23, 1915. The patient was discharged in a plaster cast, in good condition.

December, 1915. Re-entry. No change in general condition.

December, 1916. Re-entry. Since December 28, 1915, she has been home in plaster cast, and has been walking on crutches. All last winter she walked without crutches. She has done well until 2 months ago when she had pain in the knee. She is returning to the hospital on advice of Dr. Legg.

Examination: She walks with left-sided limp. She has one-half inch measured lengthening of the left leg. All the motions of the hip are normal except for slight limitations of hyperextension.

Operation, December 22, 1916, by Dr. Legg. Amputation of the left leg.

whole length of the exposed area. Cigarette drain was inserted and the wound closed.

The Wassermann reaction was reported negative.

Pathological report by Dr. Wolbach. Chondrosarcoma.

CASE 14. Tuberculosis. J. T., age 4 years, admitted to the Children's Hospital, January 31, 1917. The patient's mother died of tuberculosis, otherwise the family history is negative. The past history is negative.

Present illness: Last June the patient suddenly stopped walking on the left leg, and began to crawl on the hands and right leg. This lasted 4 days, when a soft fluctuant tumor, the size of a plum appeared on the left thigh, slowly and persistently increasing in size.

Examination: The patient has a square head, rosary, and rickets of arms and legs. Over the outer side of the left thigh there is a very large tumor.

The Wassermann

140. The urine is normal. White blood corpuscles 40,000. Mononuclears 10 per cent; polymorphonuclears 90 per cent.

X-ray examination shows (1) destructive process involving the neck of the left femur with fracture of the neck and no periosteal thickening, (2) area of absorption of the right temporal region (Figs. 21 and 22, Case 14).

Operation, February 1, 1917, by Dr. Ladd. In-

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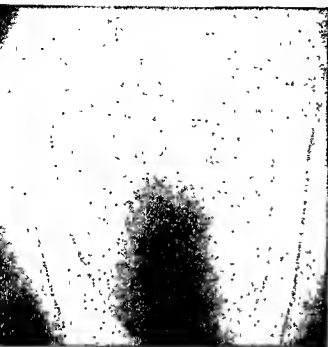


Fig. 21, Case 14

May 17, 1917 Ether, Dr. Lovett. Incision and drainage. One ounce of pus was evacuated.

The periosteum of the femur was thickened. No pus to femur was found.

July 5, 1917. The patient was discharged to Wellesley.

Pathological report by Dr. Wolbach Tuberculosis.

CASE 15.¹ Tuberculosis J. R., age 20 months, admitted to the Children's Hospital, September 24, 1913.

The family history reveals tuberculosis on mother's side, otherwise negative. The patient had rickets in February and March of this year.

Present illness. In March of this year, a swelling appeared on the index finger of the left hand. Since that time numerous nodules have appeared in various parts of the body, sides of left abdominal wall, scalp, etc. One of these nodules has broken down and discharged pus.

thickening over the left lower jaw. The heart and lungs are normal. The abdomen is normal. There are a few small swollen areas on the surface of both lower extremities, a thickening of the upper portion of the right shin, fusiform enlargement of the first two phalanges of the first finger of the left hand, with slight motion in the joint, swelling elastic to touch, in inner side of dorsum of left foot two prominences, located 2 inches above the right supra-orbital region about 1 centimeter in diameter,

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thickening over the left lower jaw. The heart and lungs are normal. The abdomen is normal. There are a few small swollen areas on the surface of both lower extremities, a thickening of the upper portion of the right shin, fusiform enlargement of the first two phalanges of the first finger of the left hand, with slight motion in the joint, swelling elastic to touch, in inner side of dorsum of left foot two prominences, located 2 inches above the right supra-orbital region about 1 centimeter in diameter,

¹Case reported by H. J. Fitz Simmons Boston M. & S. J., clxxv, 24, 547-550.



Fig. 22, Case 14

red and semi-fluctuant, on dorsum of left foot, there is a slight swelling from the toes to the ankle-joint.

The von Pirquet is positive. Wassermann negative. The urine is normal. White blood corpuscles 15,600, polymorphonuclears, 60 per cent, lymphocytes 40 per cent.

X-ray examination shows: (1) Three punched out holes in the frontal region of the skull with a slight reaction about each. (2) Three areas of absorption at lower end of the left humerus with little evidence of bony reaction; loss of substance in the center of left ulnar shaft with some periosteal reaction, loss of substance in the basal phalanx of the left index finger and considerable thickening of cortical bone about this cavity. (3) There is a cavity in the upper third of the right tibia shaft with considerable cortical thickening about it and marked bone atrophy in rest of the limb (Figs 23, 24, and 25, Case 15).

Operation, October 3, 1913. A section of skin over the two superficial abscesses on the thigh was removed. The specimen was sent to the Medical School for examination by Dr. Dyer.

October 21, 1913. The tumor over the right parietal region was aspirated. A piece of cortex was removed from the tibia. Thick yellow pus escaped from the wall of definite abscess. The cavity was closed with drainage. A guinea pig was inoculated with material from the above operation. The child was sent to Wellesley, and readmitted to hospital several times.

October 24, 1914. Discharged to Boston Consumptive Hospital, Mattapan.

Pathological report. There are sections through the skin and granulation tissue from the bone. The skin is essentially normal except for a very heavy diffuse infiltration with lymphoid cells, plasma



Fig 23

Fig 24
Case 15

Fig 25

cells, polymorphonuclear leucocytes and eosinophiles. The lower layer of the corium, however, presents a typical layer of tuberculous tissue which forms the wall of a cavity with caseous contents.

is heavily infiltrated with mononuclear (endothelial) leucocytes and polymorphonuclear leucocytes. One border of the granulation tissue is caseous. In this case the process is rapid. In spite of numerous polymorphonuclear leucocytes there is no positive evidence of pyogenic infection, and the whole process is to be interpreted as a rapidly progressing form of tuberculosis.

CASE 16. T. H. ... years, 1917.

Present illness. Two weeks ago, without history of injury, the patient began to have right-sided limp. There was no pain or tenderness. Dr Lovett advised rest in bed. An X-ray taken two weeks ago shows elevation of periosteum, below and behind trochanter of right femur. This morning the patient complained of severe pain in both hips, and both hips were fixed by muscle spasm. In a few hours the pain subsided, and the left hip was freely movable. The right was still held by spasm, and was painful on attempted motion.

Examination. The patient is a well developed and nourished child. The right hip is swollen. There is a general thickening around the joint with tenderness on the inner and posterior aspect of thigh. No fluctuation or areas of special induration are made out. The hip is fixed in 30 degrees flexion by muscle spasm and permits of very little motion on account of pain.

The von Pirquet is slightly positive. The urine is normal. Culture from the hip-joint shows *no growth*. Temperature 99° on admission, and 102.6° the next evening. Pulse 120 to 130.

X-ray examination shows destructive process in the neck of the femur extending through to the epiphysis, with periosteal proliferation (Fig. 26, Case 16).

Operation, October 5, 1917, by Dr Lovett. An incision was made over the right trochanter and carried deeply into the tissues until the head of the femur could be readily palpable. No pus was found. A small incision was made into the capsule of the joint and 3 drams of turbid fluid escaped. The wound was closed with drainage.

November 6, 1917. The patient was discharged home, in abduction splint.

November 19, 1917. Re-admitted. The condition has been satisfactory until one week ago, at which time he began to lose color and appetite and an afternoon temperature was noticed. Examination at this time shows an acutely ill child, with a small sinus of the right hip, which drains a small amount of seropurulent material. There is no induration or fluctuation about this. White



Fig 26



Fig 27

Case 16

blood corpuscles 18,600, polymorphonuclears 78 per cent, mononuclears 22 per cent.

November 27, 1917. The condition is worse, the patient vomits considerably and is drowsy. The urine shows acetone. There is a questionable stiffness in the neck. The knee-jerks are slightly exaggerated. There is an ankle clonus which is not sustained. Lumbar puncture shows a clear fluid, under slight pressure, containing 52 cells, 90 per cent of which are mononuclears.

November 28, 1917. Dr. Morse makes a diagnosis of probable tuberculous meningitis. The child became gradually worse and died on December 3, 1917.

Pathological report by Dr. Wolbach A specimen taken at the operation, consisting of the upper part of the shaft and head of the femur, was examined and reported tuberculosis (Fig 27, Case 16).

CASE 17. Tuberculosis R. M., age 5 years, admitted to the Children's Hospital, January 4, 1910. The family history is negative. The patient had measles, whooping cough, and anemia at 1 year of age, scarlet fever at 2, small pox, but no other history of importance.

Present illness. Three months ago the child had inflammation in the groin after a fall on the right hip, associated with pain and fever. This lasted 8 weeks, during which time he was in bed. After this he walked with a limp. Three weeks ago the upper right forearm showed an area on the inner surface the size of a hen's egg—swollen, hard, very painful on motion. The swelling of the leg increased and became reddened and tender.

Examination. The patient is pale, but is otherwise normal except for local condition. The right femur shows a swelling and induration, extending from the groin to 3 inches above the knee, also thickening about the trochanter. On the right humerus there is an area of redness and induration the size of a small hen's egg. Over the left humerus, there is an area of induration the size of a half dollar.

White blood corpuscles 6,400, differential count—polymorphonuclears 58 per cent, large mononuclears 10 per cent, small mononuclears 26 per cent, eosinophiles 2 per cent. Red blood corpuscles 4,780,000. Hemoglobin 90 per cent. The urine is normal. Tuberculin reaction not reported. Temperature up and down from normal to 101°. Pulse averaged 110.

X-ray examination shows: (1) Marked destructive process of right femur in upper portion near the trochanter with sequestrum formation and periosteal thickening, also similar process of mid-shaft. (2) Localized destructive processes of mid-shaft of both humeri with marked periosteal proliferation.

Operation, January 14, 1910, by Dr. Lovett. An incision was made over the femur. Two sequestra were removed. The wound was drained. Incision and drainage of abscesses on each of the arms. Holes were found communicating with the inside of the bone in each case.

March 16. The patient was discharged to Wellesley; sinuses still discharging.

June 29. Returns for further treatment.

July 27. Discharged to Wellesley in splint.



Fig 28



Fig 29

Case 17

March 10, 1911 Readmitted for operation, but improved so much in house that he was discharged to Wellesley

October 11, 1911 Readmitted to the Hospital, and on October 17 1911, had an operation by Dr Thorndike Removal of sequestrum from femur

Pathological report by Dr Wolbach There are two sections both containing necrotic bone tra-

beculae and marrow tissue In the marrow and at the periphery in areas with bone trabeculae are perfectly typical miliary tubercles A few are very early and consist of collections of large cells (epithelioid—endothelial) only, others with giant cells and caseation Surrounding the remains of the marrow is a diffuse mass of caseous material and tuberculous granulation tissue with necrotic remains of bone tissue. Diagnosis: rapidly progressing tuberculosis of bone (Fig 30, Case 17) Dr Councilman reported the infection in the specimen of bone removed at the first operation by Dr. Lovett to be tuberculosis



Fig 30, Case 17



Fig 31, Case 18



Fig. 32.



Fig. 33

Case 19

CASE 18. Tuberculosis C. P., age $4\frac{1}{2}$ years, admitted to the Children's Hospital, November 27, 1916. The family history is negative. The patient had scarlet fever at 4 years, otherwise the past

imp follow-
of pain in

the outer side of the left thigh.

Examination. The patient is normal except local condition. She walks with left-sided limp. The left hip is in place. Abduction is limited to 15 degrees, with 10 degrees permanent flexion. There is slight thickening of the hip. There is tenderness on pressure with slight shortening and atrophy of left leg.

The von Pirquet is positive in 36 hours. The urine is normal. White blood corpuscles 20,900, polymorphonuclears 78 per cent. Mononuclears 22 per cent. The temperature ranges from 99 to 100.5° with afternoon rises. Pulse averages 90. Wassermann not reported.

X-ray examination shows an area of absorption in the trochanter of the left femur, with slight periosteal reaction (Fig. 31, Case 18).

December 13. The patient was put in traction splint.

February 27, 1917. The patient was readmitted to the hospital for operation on the left trochanter.

Operation, March 3, 1917, by Dr. Lovett. An incision was made over the great trochanter. Immediately after going through the subcutaneous

tissue one ounce of stringy, purulent material was evacuated. No caseous material was encountered. The upper portion of trochanter has a small opening into the cavity. No sequestrum was present. The wall of the cavity was hard and smooth. The wound was closed with drainage. Examination of the specimen removed at this operation by Dr. Wolbach showed tuberculosis.

Pathological report by Dr. Wolbach. There is a

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tissue with small caseous foci and giant cells, and occasional definite tubercle formation. The tissue contains no bone. The appearances suggest a rapidly progressive tuberculosis with rapid caseation and little fibroblastic reaction.

CASE 19. Osteochondrosarcoma C. P., age $11\frac{1}{2}$ years, admitted to the Children's Hospital, February 24, 1913. The family history is negative. The patient had measles 8 years ago, whooping cough 7 years ago, diphtheria 6 years ago.

Present illness. While playing football in the fall of 1911, he hurt his right leg, and since then has limped. He has never had any pain. There has been a lump on the leg which has not increased in size. There has been no loss of weight. He eats and sleeps well.

Examination. The patient is normal except for local condition. Just below and anterior to the right trochanter is a swelling about 3 inches in



Fig. 34, Case 20

diameter, not reddened, but hard and apparently connected with the bone. There is some slight pain on pressure over the middle of the tumor. There is no limitation of motion of the hips. There is no difference in the length of the legs. Circumferences of the calves are the same. The thigh measures $1\frac{1}{4}$ inches greater over the tumor mass than at a corresponding point on the other thigh. The inguinal glands on the right side are enlarged and a few small glands are felt in the left inguinal region. The patient walks with a limp. The temperature is normal. White blood corpuscles 6,500. The



Fig. 35, Case 21

Present illness. A few days ago the patient had trouble with the left hip the cause of which is not known nor is there any history of injury. She has complained of pain in the knee for the past year. The pain is worse on motion. One week ago she began to walk lamely. There is no loss of flesh. Swelling of the left hip was noticed first last Saturday. The patient was referred to the House of the Good Samaritan, by Dr. Legg.

32, Case 19)

Operation, March 7, 1913, by Dr. Lovett. A piece of bone was removed from the right femur and sent to Dr. Councilman for diagnosis. The bone

Case 20)

February 23, 1915. Note: The patient died at the House of the Good Samaritan after operation for sarcoma of the femur.

CASE 21. Tuberculosis. R. S., age 2 $\frac{4}{12}$ years, admitted to Children's Hospital, January 20, 1910. The family history is negative. The patient had bronchitis at 7 months, chicken pox at 8 months, whooping cough at 9 months, German measles, at 1 year 10 months.

Present illness. One morning in April, 1918, the patient refused to use the limbs. Shortly afterward he began to walk with a limp on the left side. He was treated for infantile paralysis. The limp has never improved. After the attack of German measles, he became weaker in the legs and again refused to walk for a few days. He resumed walking, but

33, Case 19)

CASE 20. Sarcoma. H. L., age 4 years, seen in the out-patient department of the Children's Hospital April 26, 1910. The family history is unimportant. The patient had measles 1 year ago, mumps one and one-half years ago; otherwise the past history is unimportant.



Fig 30



Fig 37

Case 22

with more of a limp. In December, 1918, a swelling appeared over the crest of the ilium, on the affected side. This increased markedly in size 6 days ago. There has never been any fever, night sweats, or loss of flesh.

Examination. Large cervical glands, Harrison's grooves, and rosary are present. Left dorso-lumbar scoliosis. There is a swelling over the crest of the left ilium. The knee-jerks are exaggerated on both sides. There is a suggestion of ankle clonus on both sides. No Babinski.

There is a swelling on the left side just lateral to the sacro-iliac joint, which is not tender, or hot. Sense of deep fluctuation is present. The swelling appears to be separate from the crest of the ilium. There is a fluctuant mass, situated directly over the sacro-iliac joint, palpable by rectal examination.

White blood corpuscles 13,400. The urine is normal. The von Pirquet is positive. Wassermann not done. The temperature is normal. Pulse 110.

X-ray examination shows a destructive process of the left sacro-iliac joint with a thin shell of cortical bone remaining, having almost the appearance of a sequestrum (Fig 35, Case 21).

Operation, January 23, 1919, by Dr. Lovett. An incision was made over the crest of the ilium. An ounce of pus was encountered; also necrotic bone. A piece of this bone was removed for a frozen section. Report immediately made by Dr. Wolbach that this showed tuberculosis. The wound was closed with a small drain.

February 12, 1919, discharged home to report in one month to Dr. Lovett.

Pathological report by Dr. Wolbach. The permanent slide of this case contains tuberculous granulation tissue with many small tubercles, giant cells, and

extensive caseation, with all appearances indicative of active tuberculosis.

CASE 22. Osteomyelitis E. B., age 10 years, admitted to the Children's Hospital, March 6, 1916. The family history is unimportant. The patient had measles at 2 years, whooping cough at 2½ years; no other illness.

Present illness. The child fell on the ice a couple of days before the present illness was noticed. About 9 weeks ago the child complained of pain in both knees, also pain in right hip. Three days later she remained in bed with a fever of 105°. The fever continued 4 days, when the temperature gradually came down to normal in the morning, but was higher in the evening. The child has been losing weight, and has been having night cries from the beginning of the trouble.

Examination. The patient is a poorly nourished child with enlarged cervical glands. The right lower extremity is held abducted 20 degrees, with 40 degrees external rotation, and 20 degrees of flexion. No motions allowed. There is a thickening about the hip and spasm of the hip and thigh muscles. The deep iliac glands are enlarged. There is a slight limitation of motion in the left hip.

The von Pirquet is negative in 48 hours. The urine is normal. White blood corpuscles 24,000. Polymorphonuclears 79 per cent, mononuclears 21 per cent.

X-ray examination shows marked destructive process of the neck of the femur with very little evidence of any formative change (Figs. 36 and 37, Case 22).

Operation, March 9, 1916, by Dr. Legg. An incision was made over the trochanter, and the marrow cavity opened. Gray granulations were found.



Fig 38, Case 23

A finger was carried down to the hip-joint. The head was found to be loose in the joint. Closure with drainage, in 45 degrees abduction.

Operation, April 15, 1916, by Dr Thorndike Sequestrum removed. Small amount of pus evacuated.

Operation, May 6, 1916, by Dr Lovett A small pus pocket found in the bone, was thoroughly cleaned out.

July 27, 1916 Small abscesses continued to appear, and were drained until present date, when patient was discharged to Wellesley.

March 9, 1917 History between this date and the last is a succession of operations for pus pockets. The wound at the hip is still discharging at this date.

Pathological report by Dr Wolbach There are sections of three fragments of bone from the operation of March 9. They show newly-formed granulation tissue invading puriform material and enclosing necrotic bone spicules. In a few places there is new bone formation. There is no evidence of tuberculosis, and the process is that of early repair of bone after a pyogenic infection.

CASE 23. Tuberculosis A B, age 21 months, admitted to the Children's Hospital, January 14, 1918. The family history is unimportant. The child was normal up to 15 months.

Present illness The patient was perfectly well up to 2 weeks ago. At that time he refused to stand or sit up. He complained of pain with motion of the head, and has held his head thrown back. There has been a marked loss of flesh during the past 2 weeks.

Examination was negative except for the local condition. The child refuses to walk, but will stand on the left leg when supported. He holds the right knee and hip flexed with slight lumbar lordosis. On the right side of the abdomen is an elongated mass in the region of the psoas muscle. It is not fluctuant or tender. There is no swelling in Petit's triangle. There is a slightly rounded prominence over the region of the spinous process of the twelfth dorsal and first and second lumbar. There is a slight swelling to the right of and below this in the muscles. The spine is rigid with muscle spasm.

There is no fluctuation or local tenderness. The right hip is held in 45 degrees permanent flexion. There is a slight exaggeration of the knee-jerks.

The von Pirquet is positive in 12 hours (human and bovine). White blood corpuscles 13,600. The urine is normal.

X-ray plates show thickening and elevation of the periosteum and increased density in the soft tissues over the thickened bone (Fig 38, Case 23).

January 22, 1918 The patient was put in a posterior shell, and discharged to out-patient department.

April 22, 1919 Re-entry. One month ago the patient began to have pain in the left lower leg. Four days ago the mother noticed a reddened area the size of a 10-cent piece at the juncture of the upper and middle thirds, and in front of the leg. This gradually increased in size. In the middle third of the left leg is a symmetrical swelling over which the skin is red, and quite warm. In the center of this there is an area of fluctuation.

Operation, May 14, 1919, by Dr Lovett and Dr. Wolbach An incision over the left tibia discloses a superficial abscess cavity, containing one ounce of fluid pus. Granulations and pieces of fascia were taken by Dr Wolbach. Periosteum was thickened, but bone was of normal appearance. The wound was closed without drainage.

June 19, 1919 The patient was discharged to Wellesley. The leg wound healed, and the patient wears a plaster jacket.

Pathological report There are two slides, one of fascia with miliary tubercles, much lymphoid and plasma-cell infiltration and little caseation, and one of tuberculous granulation tissue with much caseation and many small tubercles, with giant cells. The whole is indicative of active tuberculosis.

CASE 24. Tuberculosis R. K., age 2 3/12 years, admitted to the Children's Hospital, March 10, 1919. The family and past history is negative.

Present illness At 11 months of age it was noticed that the right hand was becoming thicker in the anteroposterior plane. There was no pain associated with this and no disability, no loss of weight. There was slow progress for 16 months, at which time it was noted the right leg was also becoming thicker. The child walked without complaint.

Examination The child is normal except for local condition. There is swelling on the back of the hand over the third metacarpal; no redness, local heat, or tenderness. The swelling is quite marked over the right tibia, no redness, local heat or tenderness.

The urine is negative; the von Pirquet positive; the Wassermann negative. White blood corpuscles 19,000. Temperature 100° to 101°. Pulse 100 to 110.

X-ray examination shows: (1) a destructive process in the center of the shaft of the right tibia, with considerable thickening of the cortex and a marked new formation of periosteal bone, (2) a destructive process just below middle of shaft of the right radius with periosteal reaction of quite

marked degree; (3) destructive process of the whole third metacarpal bone of the right hand (Figs. 39, 40, 41, and 42, Case 24).

Operation, March 25, by Dr. Sever. No pus was found under the periosteum of the tibia. Pus was found in the medullary cavity. No organism was seen by microscope.

April 11. Dr. Wolbach reported active tuberculosis of bone.

April 30. Discharged. The wound showed little tendency to heal.

Pathological report by Dr. Wolbach. The material consists of sections of three fragments of cortical bone, all showing marked resorption of bone with great enlargements of the haversian canals. The inner layer of the cortex is reduced to a coarsely trabeculated structure and there is evidence of rapid decalcification and resorption of the bone tissue. Between the trabeculae and their remains is a loose textured vascular connective tissue in which are numerous miliary tubercles which have not progressed to caseation. The tubercles are very characteristic and consist of collections of mononuclear cells (epithelioid or endothelial) with typical giant cells. The most striking feature of the sections is the diffuse reaction with absorption of bone, apparently by a process of decalcification, as osteoclasts are rare and many of the degenerated trabeculae of bone are surrounded by osteoclasts. Here and there new bone is being laid down, and the two processes of bone formation and resorption are curiously intermingled in what is essentially the tissue formed in the diffuse reaction to the tubercle bacillus. The connective tissue response, resulting in a diffuse granulation tissue formation with tubercles, is essentially the process seen in pyogenic infections of bone in early repair (Figs. 43 and 44, Case 24).

The interpretation of the above findings is that the process is one of considerable rapidity and rapid extension, and the effect upon the bone forming cells is essentially that seen in the early repair of pyogenic infections.

CASE 25. Syphilis. J. D., age 7 $\frac{8}{12}$ years, admitted to the Children's Hospital, February 26, 1915. The father had neisserian infection and the mother had acne 10 years before marriage. A maternal aunt had keratitis when a child. There have been no stillbirths or miscarriages in the family. The patient is a normal child. He had measles at 2, at 3 months had eruption of sores about mouth, the scars of which can now be seen, at 4 years had keratitis, treated at the Eye and Ear Infirmary, 3 weeks ago had tonsillitis with swollen glands of the neck. Ever since birth the child had enuresis.

Present illness. For five years there has been bowing of the left shin bone. This was first noticed by the mother, when the leg was swollen, tender, and sore. The pain and tenderness were worse at night. There were no night cries or night sweats. During the past 2 years the swelling has become worse, but the pain has decreased. He has been



Fig 45. Case 25

treated by "blood medicine" for the past 3 years. He has always been pale and anemic looking. The swelling has never broken down nor discharged pus.

Examination. The patient is poorly nourished and developed, has general glandular enlargement, scars at corners of the mouth. The teeth are notched. The liver is palpable about an inch below the right costal region; there is a separation of the recti. The patient stands with a decided list to the right showing a slight right dorsal scoliosis. The patient walks with a fair amount of right-sided limping, but no functional disability. There is a limitation of external rotation of the right hip to 30°. On the right thigh there is a general outward and forward prominence of the femur, especially in its lower three-fifths, with considerable thickening of the shaft. The left thigh is similar to the right though the deformity is not so marked. The left leg shows a marked overgrowth of the tibia in thickness, forming a prominent general forward bowing, especially in its lower two-thirds, and a considerable overgrowth in length. The fibula also shows overgrowth. There is a general roughness over the crest of the tibia. The reflexes are exaggerated on the right. There is a positive Oppenheim on the left.

March 1. Dr. Derby saw patient for eye condition. He reports a fine scar on the left cornea, and the remains of an old choroid retinitis. The whole condition is most suggestive of old syphilitic keratitis.



Fig 46, Case 26

March 2 Dr Post saw the patient and considers the upper central incisors "near Hutchinsonian." The scars about the lips are unusually well marked.

March 7, 1915. The patient was discharged home to take medicine.

X-ray examination shows (1) marked thickening of the cortex and periosteum of the lower half of the left tibia (Fig 45, Case 25).

Diagnosis, syphilis.

CASE 26 Tuberculosis I M, age 10 years, admitted to the Children's Hospital, December 30, 1918. The father died of tuberculosis. The past history is negative.

Present illness. One year ago a girl stepped on her left foot and she went to the Massachusetts General Hospital. The foot was put in the cast and kept in it 4 months.

Examination. There was glandular enlargement in the posterior triangles of the neck. The child was otherwise normal, except for the local condition. There was fusiform swelling over the dorsum and inner aspect of the left foot particularly. There was no redness or discoloration. Two small scars were seen on the inner aspect of this mass, apparently healed sinuses. There was tenderness over the swelling, and limitation of ankle-joint by about

rise from 99
The von Pir-
the Wassere-
scales 12,400.
nation shows

fracture of the base of the first metatarsal and absorption of lime salts (Fig 46, Case 26).

Operation, January 13, 1919, by Dr. Lovell. An incision was made over the first metatarsal joint. The tissue was cheesy and yellowish looking. Dr. Wolbach took his own specimen. A report came back in 10 minutes of positive tuberculosis. The wound was closed without drainage.

January 23, 1919. The wound healed by first intention. The patient was discharged in a bivalved cast to Wellesley.

Pathological report by Dr. Wolbach. The sections include bone, articular cartilage and ligament, all showing tuberculosis. The bone is largely replaced dense tuberculous granulation tissue in which are many tubercles surrounded by fibrous tissue zones. The tubercles are occasionally caseous. The process is that of slowly-progressing tuberculosis with much fibroblastic reaction. No new bone formation can be seen in the material at hand. There is no acute reaction.

DISCUSSION

The diagnosis of infectious lesions of the bones would be simple if each infectious agent always produced the same reaction. The pyogenic bacteria alone may be counted upon to conform to type; at first destruction of tissue followed by repair, which in the case of bone means necrosis with more or less local disappearance of lime salts followed by new bone formation from adjacent healthy bone structures. It must be remembered in the reaction of bone to injury that new formation of tissue is always followed by ossification and therefore that granulation tissue from bone or periosteum becomes bone tissue.

The above simple sequence in the pyogenic infections accounts for the definite criteria

production from adjacent tissue with very little production of new bone, and this seems to have been the result in Case 4.

Syphilis affects bone in two ways, both effects of the proliferative reaction of the casual agent, and results either in the destruction of bone, or the new formation of bone. Both effects may occur in the same case. Destruction of bone follows the formation of local, rapidly-formed gummatous lesions, sometimes of endosteal and periosteal origin, sometimes perivascular and extending into bone. On the other hand, the degree of reaction to the spirochæta may be slight and result only in proliferation of cells of the

periosteum and endosteum. the newly-formed tissue developing osteoblasts and eventually new deposits of bone is the result. In one case, therefore, there is choking of normal bone by the gummatous process with its necrosis; in the other case there is merely stimulation of bone-forming tissue.

Tuberculosis presents more possibilities. In soft tissues it is known that the tubercle bacillus can duplicate the reaction of almost any type of pathogenic bacterium. Thus the various types of exudative response to injury may be the result of the tubercle bacillus alone; exudates essentially fibrinous or essentially puriform in character are frequently found upon serous membranes—meninges, peritoneum, pleura, and pericardium. In bone we usually think of tuberculosis as a proliferative process resulting in the new formation of tissue with consequent obstruction of the bone, and this is the commonest type of tuberculous bone lesion which gives rise to the formation of bone cavities without a peripheral reaction or condensation of bone.

In tuberculosis of bone, as in soft tissues, there may occur: (1) exudate, fibrinous or puriform, (2) discrete proliferative lesions, the tubercle which may progress slowly or rapidly with much or little caseation, and (3) a diffuse proliferative reaction, following the exudative—essentially tuberculous granulation tissue, with much or little caseation. In the third instance, in the granulation

tissue, there may be new bone formation just as in the repair of pyogenic processes, at a time when destruction or resorption of bone is going on. In Case 24 is an excellent example of this double process, "destructive" and "formative," due solely to the tubercle bacillus. The X-ray plates not only resembled those of a pyogenic infection but the appearances of the bone at operation were equally confusing to the pathologist, whose diagnosis based upon the gross was early osteomyelitis.

It is of interest to note that the effect of the tubercle bacillus in this case upon the cortical bone was not unlike that of the more toxic staphylococcus in that necrosis of bone trabeculae occurred with decalcification remote from actual tubercles. That this process may, in rare instances, result in sequestrum formation is shown in Case 17.

The punched-out lesions of the bone in Cases 14 and 15 represent a rapid discrete extension of the proliferative reaction followed by extensive caseation.

The important lesson from the pathological study of this series of cases is the reminder that tuberculosis in bone may simulate any other infectious process in location and character of the lesion. Diagnosis from X-ray studies alone is therefore occasionally impossible and recourse must be had to other clinical evidence, and when possible to pathological examination.

URETERO-URETERAL ANASTOMOSIS¹

By REUBEN PETERSON, M.D., F.A.C.S., ANN ARBOR, MICHIGAN

ANASTOMOSIS of the resected or incised ends of the ureter may be classed as an uncommon operation. Only rarely does the surgeon remove portions of the ureter deliberately. If this be done for malignant disease, anastomosis of the ureter with the bladder is usually chosen as a less hazardous procedure than uniting the cut ends of the ureter. Only rarely is the ureter severed accidentally by the skilled surgeon. When the accident occurs in unskilled hands, more often than not it goes undiscovered and death is ascribed to shock or peritonitis.

Since the operation of uretero-ureteral anastomosis is rare, it becomes the duty of the surgeon to record each case in detail, especially the end-results, so that doubtful points about the operation may be eventually

cleared up. The task of the reporter, however, has been made more difficult by improvements in the methods of direct examination of the genito-urinary tract made during the past 20 years. A patient with an anastomosed ureter cannot be pronounced cured, so far as the operation is concerned, until bladder, ureter, and the corresponding kidney have been explored, functional tests performed, and ocular demonstrations of the condition of the urinary tract made by the X-ray. Without such work the cured patient may in reality be one with an atrophic or hydronephrotic kidney where the repaired ureter leads to the bladder but does not functionate, the patient being "perfectly well" because the other kidney and ureter are doing double work very satisfactorily.



Fig 1. Roentgenogram of right ureter and pelvis of kidney showing moderate dilatation of ureter and pelvis of kidney. No 6 F catheter.



Fig 2. Right ureter 6 months after an end-in-end uretero-ureteral anastomosis. Fluid ran back from pelvis of kidney around No 5 F. catheter, filling the bladder.

¹Read before the Southern Surgical Association, New Orleans, December 17, 1919.

Fortunately, I am able to report the following case of uretero-ureteral anastomosis subject to the conditions set forth above.

Mrs. H., gynecological case No. 10,387, age 49, widow, was referred to the University Hospital, March 1920 by Dr. B. H. Hixon of Durand, Michigan.

for more than a year, examination upon entrance showed the uterus to be freely movable with no induration to be made out in the broad ligaments. Microscopical examination of a piece of the affected cervix having established the diagnosis of medullary squamous celled carcinoma, the patient was subjected to the radical abdominal operation for the removal of the cancerous uterus, May 16, 1919.

Operation. The ulcerated, cancerous cervix was thoroughly cauterized through a water-cooled speculum prior to opening the abdomen. The broad ligaments were opened in the usual manner after ligation of the round and infundibulopelvic ligaments. Unfortunately the usual technique was Long
ne to

omit the passage of the forefinger along the ureter and beneath the uterine artery. Instead, a curved ligature passer was supposedly carried along the ureter and the artery ligated between two ligatures. Much to my chagrin I at once realized that the ureter had been divided, in other words, the ligature passer had gone below the ureter as well as the uterine artery.

The left uterine artery was ligated by the usual technique, and the uterus with its appendages together with a wide vaginal cuff removed.

The incised ends of the ureter were then united in the following manner:

The distal or bladder end of the cut ureter was split with scissors on its anterior surface for a distance of one-fourth inch. The mucosa at this end was trimmed off for a short distance and the lumen of the duct stretched slightly with a hemostat. The proximal or kidney end of the ureter was then transfixed with a fine cambric needle armed with a fine linen thread. Both ends of this suture were threaded through a straight needle which was passed through the lumen of the distal end of the ureter and out of the duct one-third inch below the angle of the slit on the anterior surface of the ureter. The proximal end of the ureter was drawn one-third inch into the distal end by means of this traction suture which was steadied by an assistant but not tied. At the point of juncture of the upper with the lower portion of the ureter the walls were united by five fine silk sutures passed by a fine curved needle. These sutures included all coats of the two portions of the ureter except the mucosa. The slit portion of the distal end was then united with three fine silk sutures which also passed through all but the mucosal coat.

The traction suture was now removed and the anastomosed ureter placed as nearly as possible in its proper position. The two cut edges of the pelvic peritoneum were brought together by a running catgut suture over the ureter and a small piece of gauze drain run out through the vagina. Both ureters were left completely peritonized.

The patient naturally was somewhat shocked by the combination of a radical abdominal hysterectomy and the ureteral anastomosis and for a few days the pulse rate was somewhat elevated. There was no leakage of urine by the vagina. The usual postoperative amount of urine was secreted, and chemical and microscopical examination showed nothing abnormal. The patient voided urine shortly after the completion of the operation and catheterization was never necessary.

The patient returned to the hospital December 12, 1919, for an examination. A careful bimanual examination showed no signs of a return of the carcinoma. Through the kindness of my colleagues, Hugh Cabot and J. G. Van Zwaluwenburg, it was possible to obtain a very complete report of the condition of the right urinary tract. Their report is as follows:

"Plates were made of the kidney region in the double screen technique before and after injection of opaque fluid. Before injection the X-ray catheter was seen in place following the usual course. The kidney shadow was not remarkable. In the plate taken after the injection of the bromide, the calyces of the right kidney were seen to be much dilated. The kidney shadow did not seem to be enlarged. The ureter appeared to be dilated to some extent throughout its length but more especially from the fifth to the third lumbar vertebra (Figs. 1 and 2).

"We believe that this patient has a minor degree of dilatation of the terminal calyces, pelvis, and ureter.

"Examination of bladder shows nothing abnormal. The ureteral orifices are symmetrical. There is no evidence of inflammation. A No 6 F catheter passed freely to the kidney, on both sides. There is no obstruction. Normal flow of normal urine appears from both kidneys. Kidney function as tested by phthalein shows appearance time on right of five minutes, on left four minutes. Function of right kidney in ten minutes is 5 per cent, of left 10 per cent. The capacity of right renal pelvis 16 cubic centimeters. The flow from the right side was steady and suggested dilatation and paralysis. Examination in the bacteriological laboratory of 9.25 cubic centimeters of urine from the right side showed no organisms; no growth obtained. An injection of a 25 per cent solution of sodium bromide was made and a roentgenogram taken. Fifteen cubic centimeters withdrawn from the pelvis after X-ray finished.

"Examination of the plate shows a moderate degree of dilatation of the renal pelvis and flattening of the calyces. I should regard it as a first degree of hydronephrosis.

Opinion This woman has a very slight dilata-

Twenty-three years ago at the Nashville meeting of this society, our distinguished Fellow, Doctor Bovée, presented his classical paper on uretero-ureteral anastomosis. At this meeting of the same society, we are able to state that almost all his conclusions have been completely justified by subsequent surgical ureteral work. In order to study this work and draw certain conclusions from it, I have carefully gone over the literature of the subject and collected 72 cases of uretero-ureteral anastomosis by various methods. Other cases, in which wrong references have been given or in which insufficient data have been furnished, have been placed in another group together with their references in order to save the time and energy of some subsequent investigator.

Bovée's first conclusion that "uretero-ureteral anastomosis is a perfectly feasible procedure" is amply borne out by a study of the 72 collected cases. It is assumed that by feasible is meant not only that the two ends of a divided or resected ureter can be united without causing the death of the patient from leakage but that the patency of the tube can be accomplished by such surgical procedures. Evidently the ends of almost any severed ureter can be sutured together, but if stenosis follows it may amount to the same thing as tying off the ureter.

Again the cases must be scrutinized carefully to see if the deaths occurred from the ureteral operation or from the operation giving rise to the accident. Had the patient in my own case died of shock from the combined radical hysterectomy and ureteral anastomosis—the latter procedure might have contributed toward the death due to the prolongation of the entire operative procedure—such death could not be counted against the feasibility of ureteral anastomosis.

There were 4 deaths out of 72 cases directly attributable to the ureteral anastomosis or a primary mortality of 5.5 per cent. Certainly this is not a prohibitory mortality, especially

since all of them occurred in the early days of ureteral surgery.

It is even questionable if Morris' case should be included among deaths attributable to the operation since in all probability the large uterine myoma for which the primary operation was performed had produced double hydronephrosis by pressure. At autopsy, both kidneys were excessively hydronephrotic the right more than the left, although the latter had been cut and anastomosed. The left ureter was found to be watertight. Still, since hydronephrosis was found so soon after the operation the case was included among deaths attributable to the anastomosis.

In Blau's two cases, death resulted from defective suturing and retroperitoneal abscess in the posterior wall just back of the sutured ureter.

Although cardiac insufficiency is given as the cause of death in Sadowski's case, the autopsy showed dilatation of the ureter above the suture with an edematous hydronephrotic kidney.

In the other cases where death followed one or the other methods of ureteral anastomosis (Schopf, Hochenegg, Pawlik, McMonagle, Gubareff, Cobb) the deaths were unquestionably due to other causes than the results of the ureteral anastomosis.

Bovée's second, fifth, and sixth conclusions that ureteral anastomosis is preferable to nephrectomy and ligation of the ureter in the light of the results from more than 60 cases of ureteral anastomosis recorded since the publication of his paper, have been shown to be perfectly sound.

As regards the third conclusion that the preferable method is the lateral implantation or oblique end-to-end anastomosis, subsequent operations have shown the primary results of all methods to be fairly good with the advantage somewhat in favor of the end-in-end or end-in-side methods. There were 29 cases of end-to-end anastomosis with 6 deaths, 4 of which were due to the operation (Group 1), while in 25 transverse end-in-end and 15 end-in-side, 40 cases in all, there were no deaths which could be attributable to the operation (Groups 2 and 3).

Looking at the question in another light it is perfectly possible that a certain operative technique will be without mortality yet be a failure so far as functional results are concerned. Leakage after the anastomosis is a sign of faulty technique, since such leakage can only cease by the formation of granulation or scar tissue and the increasing risk of stricture which may or may not lead to hydro-ureter and hydronephrosis. In 29 cases of end-to-end anastomosis, leakage was recorded in 9 cases, while in 25 of the transverse end-in-end anastomosis, there were only 5 cases of leakage and in 15 cases of end-in-side only 2 cases of leakage. In other words, the leakage after anastomosis in 40 operations with the last two methods was 2 less than recorded in 29 cases by the transverse end-to-end method.

Personally, I do not see that one is called upon to choose the end-in-side method in preference to the end-in-end method with a view of thereby avoiding a stricture at the point of anastomosis. I believe the case reported above demonstrates beyond dispute that where the anastomosis is followed by primary union, the end-in-end method need not and probably rarely produces a permanent stricture. It is the simplest of all the methods and sacrifices but a small portion of the ureter, since it is necessary to invaginate only one-quarter or one-third inch of the proximal portion of the ureter. When considerable portions of the duct have been accidentally or deliberately resected and the tension is rendered too great by invagination of even a small part of the ureter, it is possible that transverse end-to-end anastomosis may be the preferable operation. Even here I would prefer approximation of the severed ends after loosening the bladder or kidney and the completion of the operation by the invagination method.

I am unable to see the advantage of the non-removal of the traction sutures; certainly not if the suturing about the joint made by the insertion of one end of the severed ureter with the other can be made accurate and firm enough to prevent the slipping out of the proximal end. Removal of the traction suture does away with any chance of leakage

through the suture tract, while the avoidance of the mucosal coat in the suturing about the joint also serves to prevent any leakage from a similar cause at this point. Finally, I believe that when the mucosa is removed for a short distance within the distal end of the tube, firm union takes place rather rapidly and that this is an important part of the technique so far as the prevention of leakage is concerned.

Retroperitoneal drainage should undoubtedly be employed, care taken being that the drain does not come in contact with the anastomosis. Since the large majority of the anastomoses will be in women, it is comparatively easy to drain retroperitoneally through the vagina. The ureteral anastomosis should always be carefully peritonized and as the duct is shut away from the general abdominal cavity in a comparatively few hours, subsequent escape of urine from an imperfect anastomosis would be harmless, so far as mortality is concerned.

It would seem as if the complicated methods of Monari and Soresi (Group 6) for uniting the severed ends of the ureter were too complicated and unnecessary. Each method was devised to prevent ureteral stricture, which experience has shown does not follow more simple anastomotic methods. Monari's method employed by Fournier in one case (Group 5) is a side-to-side, lateral anastomotic method, while Soresi's method is a combination of the transverse, end-to-end and side-to-side methods.

It must ever be borne in mind that from the nature of things, ureteral anastomosis will always be a rather rare operation, hence a simple, safe method must be adopted and its principles grasped, so that when called upon to unite the severed ends of a ureter, the surgeon will not be obliged to employ a complicated technique with which he has not had an opportunity of becoming familiar. Lateral anastomosis of the intestinal tract is a perfectly satisfactory operation, because the surgeon has frequent opportunities to become familiar with the technique, while such a procedure as applied to the ureter would be bound to fail in a certain proportion of cases, because of the lack of familiarity.

It follows from what has been previously stated that Bovée's oblique end-to-end anastomosis employed successfully by him in one case (Group 4) is an unnecessary refinement of technique, since successful anastomosis of the ureter without stricture can be made by the simpler end-in-end invagination method. Possibly Bovée had arrived at the same conclusion when he employed this latter method in a second case of ureteral anastomosis.

The necessity of careful examination of the urinary tract which has been subjected to uretero-ureteral anastomosis, has already been referred to. Without such an examination the reporter is simply guessing, for it is a well-known fact that a patient may apparently be in perfectly good health and still have atrophic or hydronephrotic, functionless kidney. Very few operators have recorded such postoperative urinary tract examinations.

McMonagle, as early as 1895, made a cystoscopic examination of the bladder of a patient whose left ureter had been successfully anastomosed by the transverse end-in-end method one year previously. He satisfied himself that the ureter was permeable, since he saw urine coming from the ureteral orifice. Three years later the woman was in good health. This is an exceedingly valuable observation and one far in advance of his time but we are still left in doubt as to what happened to the left ureter and kidney between the date of this examination and the last report, 3 years later. The patient may have been well with a functionless kidney and ureter.

In a patient upon whom an oblique end-to-end anastomosis had been done, Bovée found upon passage of an ureteral catheter 6 months later that the ureter was without stricture. Forssell makes the same observation about his case of end-in-end anastomosis, the ureteral sound revealing no stricture 2 years after the operation. Pozzi and Kayser passed ureteral catheters after end-in-end anastomoses and found both absence of stricture and normal kidney function, although Pozzi thought there was a difference in the flow of urine from the side operated

upon, and explained the continuous flow of urine from this side as due to a lack of contractility (peristalsis) from that side. Lavisé reports the ureteral orifice and bladder normal 3 weeks after end-to-end anastomosis. Davis collected the urine from both sides of the bladder by the Harris' segregator one month after an end-in-end uretero-ureteral anastomosis and demonstrated the ureter operated upon to be patent and the urine normal. Perlis by cystoscopic examination after an end-to-end anastomosis was able to report that clear urine came from both ureteral orifices. Fournier, 2 months after an ureteral anastomosis by the Monari method, found urine from both ureters normal. Reed 4 weeks and 6 months after an end-in-side anastomosis satisfied himself by the use of the Harris segregator that normal urine came from both ureteral orifices.

These are the only observations I have been able to find in connection with the 72 collected cases of ureteral anastomosis, and it will be noted that in no case is any information furnished beyond the permeability of the sutured ureter and the condition of the urine coming from that side. We are left absolutely in doubt as to the size and condition of the pelvis of the kidney and ureter on the side operated upon—points to be settled if we are to be in possession of all facts as to what happens after the ureter is cut and united.

It has been impossible to draw any definite conclusions regarding the functional results of ureteral anastomosis in the 72 cases. As has been before pointed out, the fact that a patient is in good health and suffers from no pain so many months or years after the anastomosis, means very little so far as proving that the ureter operated upon and corresponding kidney are functioning.

A good example is Frederick's case, reported in 1901. About 1895 he did an end-in-end uretero-ureteral anastomosis of the right ureter, an inch of which had been removed during a hysterectomy for a uterine fibroid. Then followed vaginal leakage for about 8 months, when the patient developed symptoms of acute hydronephrosis accompanied by cessation of the leakage. Frederick reported the patient as perfectly well 5 years

subsequent to these symptoms. Fortunately some 10 years later he was able to secure an autopsy on this patient. The autopsy showed stenosis at the point of the anastomosis, dilatation of the ureter above the anastomotic point to the size of the thumb, and a hydronephrotic kidney the size of a child's head.

Had it not been for Frederick's scientific interest in this case leading him to follow it up for a good many years it would have been called a cure when in reality it was a functional failure. Although the patient survived the anastomosis, the resulting condition was such as to be followed by ureteral leakage, hydro-ureter and hydronephrosis, chronic in form and giving rise to few symptoms, but enough to cause death 15 years later. Nephrectomy would have been the preferable operation here, could the subsequent history of the patient have been foretold.

When uretero-ureteral anastomosis is not followed by leakage there is an excellent chance of good surgical and functional results. When the anastomosis is followed by leakage, success surgically and functionally must be, from the nature of the case, rare. Each such case should be carefully watched with a view of subsequent surgical interference. In case the leakage be permanent, nephrectomy may be indicated in preference to a second attempt at uretero-ureteral anastomosis, when the ureter and kidney have been greatly changed by adhesions and resulting compression at the site of the anastomosis.

There will be very little argument regarding the possibility that hydro-ureter and hydronephrosis with or without accompanying infection may follow defective ureteral anastomotic suturing. Yet the statement that every repair of a sectioned ureter will be followed by distinct pathological changes in the ureter and kidney may not be so readily accepted. Yet there is a certain amount of evidence to support the truth of such a statement.

Alksne, of the Federoff Surgical Clinic in St. Petersburg, in 1908, published an exhaustive experimental study of the different methods of uretero-ureteral anastomosis. Many of his dogs subjected to the anastomosis died

so that one is forced to question the excellence of his operative technique. Still not a few of the animals lived and showed good surgical successes so far as the anastomoses were concerned. The interesting part of the research to me is the author's conclusions which in part may be stated as follows:

"Experiments show that all ureteral sutures are followed by a certain stenosis of the duct from traumatic oedema. The suture of the ureter may be perfect, yet the functional result may be poor. All sutured ureters show a characteristic type of excretion of the urine. Atony of the sutured part causes cessation of the peristaltic waves of the ureter giving rise to ureteral pocket formations. The urine accumulates in these pockets above the point of suture until enough has accumulated to force it below the anastomotic point. This will lead in all cases to hydro-ureter and in most cases to hydronephrosis."

How else can the findings in the case just reported be explained? Clinically the result of the uretero-ureteral anastomosis was perfect so far as could be judged. There was no leakage and nothing in the urine to show that there was infection of the urinary tract. Six months after the anastomosis, during which time there were no symptoms referable to the urinary tract, examination shows absolutely no signs of stricture but a moderate degree of dilatation of the ureter and kidney and definite diminution of the renal function on the side operated upon.

This looks like a confirmation of Alksne's contention that changes in the ureter and kidney follow every case of anastomosis. Mechanically and surgically the result in the reported case was excellent. There was absolutely no evidence of a stricture at any point of the duct. Yet the ureter and pelvis of the kidney were dilated.

The explanation of what causes the "atony" of the sectioned ureter referred to by Alksne has not been worked out. He ascribes it to cutting through of the muscles of the ureter and scar formation. It is possible that section of the ureter interferes with its nerve supply so that atony results. It is idle to speculate as to the causes of the condition until existence of the latter has been established beyond

question by the findings of more than one case. Hence the importance that each case of ureteral anastomosis be worked out carefully as regards the condition of the ureter and kidney.

Pozzi's and the present case also show evidence of hydro-ureter following the passage of the ureteral catheters. It will be recalled that Pozzi noticed a continuous flow of urine from the ureter operated upon and correctly ascribed it as due to a lack or diminution of the normal ureteral peristalsis. The same phenomenon was present in my own case. This continuous flow of urine from the ureteral catheter is characteristic of hydro-ureter and is a finding which is even used by urologists as a diagnostic measure in determining the exact portion of the duct which is dilated.

Granted the correctness of the conclusion that every sectioned ureter, no matter how successfully repaired, will be followed by a slight degree of hydro-ureter and hydronephrosis, such resulting condition may not be at all a menace to life or health, provided infection does not occur or if the operation has not been performed upon ureters and kidneys already diseased. Evidently the danger of excessive hydro-ureter and hydronephrosis will be greatly enhanced when the anastomosis is made in a ureter already dilated. Even here, provided primary union takes place, a fairly serviceable ureter and kidney may be found after the anastomosis. Each case must be judged by itself always bearing in mind that the functional result must inevitably be worse when the operation is performed on abnormal ureters.

The pathological changes will always be greater and the functional results worse when the surgical results are poor. Stenosis at the anastomotic point from faulty technique causing stricture and stenosis or imperfect suturing giving rise to leakage, must almost invariably lead to marked degrees of hydro-ureter and hydronephrosis. Such conditions may cure themselves through atrophy of the kidney or, if infection supervenes, may seriously menace the life of the patient if nephrectomy be not resorted to (Cobb, Morris).

Even if further observations prove that repair of the sectioned ureter will be followed by slight dilatations of the ureter and kidney and a diminution in the function of the latter, it will not mean that the operation of uretero-ureteral anastomosis must be discarded. Even diminished function is better than the complete loss which follows nephrectomy or ligation of the ureter.

CONCLUSIONS

1. No case of uretero-ureteral anastomosis can be classed as cured or successful until so proved by the most modern exploration of the repaired duct and the corresponding kidney.

2. A study of the literature of ureteral anastomosis by various methods shows that anastomosis by the end-to-end, end-in-end, and end-in-side methods is a perfectly feasible procedure.

3. Not only can the duct be made patent with little or no stricture, but a functioning kidney and ureter can result.

4. In skilled hands the primary mortality due to any one of the three methods should be very small.

5. Leakage after uretero-ureteral anastomosis probably in the large majority of cases means failure since it leads usually to stricture, hydro-ureter, and hydronephrosis.

6. Judged from this standpoint the invagination methods are preferable to the transverse end-to-end method since they are followed by fewer cases of leakage.

7. The end-in-end method of anastomosis is the operation of choice, since it is extremely simple and sacrifices the minimum amount of the ureter.

8. As claimed by Alksne from an experimental study of the different methods of uretero-ureteral anastomosis there is evidence to show that every uretero-ureteral anastomosis, no matter how perfect may be the surgical result, will be followed by a slight degree at least of hydro-ureter and hydronephrosis.

9. Although such a claim is borne out by the findings in the case reported, it needs to be confirmed by careful examination of other cases operated upon.

GROUP I.—TRANSVERSE END-TO-END ANASTOMOSIS

CASE 1. Operated upon by Schopf (53), June 2, 1886. There was no leakage. The patient died 7 weeks after

operation. There were phosphatic concretions on the bladder wall.

CASE 2. Operated upon by Hochenegg (27), February 9, 1890. The patient died on the twentieth day, from hæmorrhage. At autopsy the bladder and ureter sutures were found intact. The source of the hæmorrhage was not found.

CASE 3. Operated upon by Fritsch (21), in 1891 or

and was reported cured.

CASE 5. Operated upon by Tauffer (56). Both vaginal and abdominal drainage was used. The patient recovered and was pronounced "cured."

CASE 6. Operated upon by Cushing (14). Abdominal drainage was used. Leakage persisted for about 2 weeks. The patient recovered "Perfect result" two years after operation; "good result" 2 years later.

CASE 7. Operated upon by Blau (5), in 1894. Vaginal drainage was used. There was some leakage. The patient recovered, but the result is not stated.

CASE 8. Operated upon by Busachi (6). There was leakage for a few months. The patient recovered and remained in "good health" for one year after operation.

CASE 9. Operated upon by von Eiselsberg (40), in 1896. There was leakage for 20 days. The patient recovered, but the result is not stated.

CASE 10. Operated upon by Blau (4), March 4, 1896. The patient died on the third day, from peritonitis. Autopsy revealed a defective suture and purulent peritonitis.

was very thin. Both ureters and renal infundibula were considerably dilated. The left ureter was quite watertight.

CASE 13. Operated upon by Gallet (22). The patient recovered but the result is not stated.

CASE 14. Operated upon by Lavissé (32), October 21, 1898. Vaginal drainage was used. Although there was some temporary leakage, the patient recovered. Cysto-

found to be in perfect health, with normal kidneys, not enlarged, and urine and micturition normal.

CASE 15. Operated upon by Depage (16). There was

operation was probably successful.

CASE 17. Operated upon by Blau (5), in 1899. The patient died on the second day. Autopsy showed a retroperitoneal abscess on the posterior wall just back of the sutured ureter.

CASE 18. Operated upon by Kelly (30). Abdominal drainage was used. There was no leakage.

operation, cystoscopic examination showed function of ureter to be normal.

CASE 20. Operated upon by Botic (11). The patient re-

The patient

The patient

The patient

iciency. At

autopsy a narrowing was found at the site of the suture. The ureter was dilated above the latter and was permeable. The kidney was cedematous; hydronephrosis.

CASE 24. Operated upon by Hein (26). The patient recovered; result not given.

CASE 25. Operated upon by Hein (26). The patient recovered; result not given.

CASE 26. Operated upon by Williams (60), in September, 1909. The patient was cured and reports no trouble referable to the pelvic or renal regions one year later.

CASE 27. Operated upon by Broun (10). Vaginal drainage was used. There was some leakage although the patient recovered from operation. The result was failure, however, and the patient was operated upon again.

CASE 28. Operated upon by Gouverneur (33). There was some leakage but the patient recovered. The end-result was successful.

CASE 29. Operated upon by Gouverneur (33). The patient recovered; end-result successful.

GROUP II.—TRANSVERSE END-IN-END ANASTOMOSIS

CASE 1. Operated upon by Pawlik (44), March 28, 1889. The patient died from shock 14 hours after operation. Autopsy revealed bloody fluid in the abdomen, chronic peritonitis, perihepatitis, perisplenitis, fibrinous inflammation of the intestinal serous membrane. The sutured ureter was patulous; no leakage.

CASE 2. Operated upon by McMonagle (37), September 24, 1894. Vaginal drainage was used. There was no leakage. The patient recovered and was reported living

is not stated.

CASE 4. Operated upon by Mayo-Robson (35). The patient recovered and is reported well 6 months after operation.

CASE 5. Operated upon by Stanton (4), in 1888. The

urine coming from the repaired ureter. Three years after operation the patient is reported in good health.

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at the anastomotic point, the ureter dilated above suture to the size of the thumb, was sacculated all the way up.

successful

CASE 11 Operated upon by Noble (43), in October, 1898 Both vaginal and abdominal drainage was used There was no leakage The patient recovered and the end-result is reported as successful

CASE 12 Operated upon by Mackenrodt (34) in 1899 The patient recovered but died 2 years later from pneumonia

Harris segregator was passed The ureter was patent and urine came from both sides

CASE 14 Operated upon by Bové (8), June 11, 1900 There was no leakage The patient recovered, result not stated

CASE 15 Operated upon by Coe (13), June 17, 1900 Vaginal drainage was used The patient recovered and has remained well

CASE 16 Operated upon by Turner (57), June 26, 1900 Vaginal drainage was used The patient recovered and was "quite well" one year later

CASE 17 Operated upon by v. Gubareff (25), in 1901 The patient died from amyloid degeneration of the abdominal organs Autopsy 31 days after operation showed the ureter completely restored

CASE 18 Operated upon by Cabot (12), May 3, 1901 Both vaginal and abdominal drainage was used There was no leakage, the patient recovered One year and a

CASE 19 Operated upon by Wertheim (39), December, 1901 The patient recovered, function was restored

CASE 20 Operated upon by Pozzi (47), May 29, 1906 Both vaginal and abdominal drainage was used There was leakage for about 1 month The patient recovered Clear urine was obtained by catheter 3 months after operation

CASE 21 Operated upon by Forssell (21), June 13, 1907 Drainage was used The patient recovered Two years after operation a sound was passed The urine

CASE 23 Operated upon by Schou (54) The patient recovered, favorable result

CASE 24 Operated upon by Froost and Buquet (48), March 23, 1912 Both vaginal and abdominal drainage was used There was leakage for about 18 days The patient recovered The result is not stated

CASE 25 Operated upon by Kayser (29), May, 1914 The patient recovered Four weeks after operation, a sound was passed The repaired ureter was permeable, the kidney function normal

GROUP III—END-IN-SIDE ANASTOMOSIS

CASE 1 Operated upon by Kelly (37), May 1, 1892 Abdominal drainage was used There was no leakage The patient recovered, result not stated

CASE 2 Operated upon by Emmet (17), November 22, 1894 Abdominal drainage was used The patient recovered, result not stated

CASE 3 Operated upon by Schauta (52), November, 1898 Drainage was used There was leakage, but the patient recovered from operation The result is not stated

CASE 4 Operated upon by Morris (41), February 20, 1899 Drainage was used There was some leakage The patient recovered but the operation was unsuccessful Healing was defective and a nephrectomy was done 3 months later

CASE 5 Operated upon by Coe (13), June 3, 1899 Vaginal drainage was used Leakage was present 1 year later The patient recovered, result not stated

CASE 6 Operated upon by Goodhue (23) The patient recovered, result successful

CASE 7 Operated upon by Finney (6) The patient recovered, result not stated

CASE 8 Operated upon by Reed (49), in December, 1901 The patient recovered Four weeks after operation a Harris segregator was passed and urine came from both sides This was repeated 6 months later with same result

CASE 9 Operated upon by Johnston (28), October 1, 1902 Vaginal drainage was used The patient recovered, and function was found to be perfect 20 days after operation

CASE 10 Operated upon by Graves (24), October 31, 1907 The patient recovered and has remained in excellent health for a number of years

CASE 11 Operated upon by Doherty (58) The patient recovered, result not stated

CASE 12 Operated upon by Cobb (12) The patient died from shock

CASE 13 Operated upon by Cobb (12) The patient recovered, result not stated

CASE 14 Operated upon by Cobb (12) The patient recovered, result not stated

CASE 15 Operated upon by Cobb (12) The patient recovered, result not stated

GROUP IV.—OBLIQUE END-TO-END ANASTOMOSIS

CASE 1 Operated upon by Bové (9), April 30, 1896 No drainage was used The patient recovered Six months after operation a sound was passed, no constriction was found

GROUP V.—SIDE-TO-SIDE ANASTOMOSIS (MONARI'S METHOD)

as from the other ureter

GROUP VI.—COMBINATION TRANSVERSE END-TO-END AND SIDE-TO-SIDE ANASTOMOSIS

CASE 1 Operated upon by Sorel (55) The patient recovered, end-result, successful

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CONSERVATISM IN THE TREATMENT OF SO-CALLED ESSENTIAL UTERINE HÆMORRHAGE¹

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IN a paper published in *SURGERY, GYNECOLOGY AND OBSTETRICS*, in October, 1915, a class of cases was discussed in which the chief symptom was a marked menorrhagia varying from 8 to 12 days, in some instances dating back to the first menstrual period, and occasionally associated with varying periods of metrorrhagia. These cases had been labeled with varying names such as chronic metritis, fibrosis uteri, metropathia hæmorrhagica and for want of a better terminology, essential uterine hæmorrhage. The name assigned to the condition is of no great importance, the essential point being the proper grouping and recognition of these cases so as not to confuse them with uterine bleeding from such causes as tumors, inflammatory lesions or other demonstrable abnormalities. The histological study of the material removed at operation disclosed no definite etiological cause. The changes that were found in the uteri of these cases were also found in a number of normal control cases. Neither the myometrium, the fibrous tissue, the elastic tissue nor the changes in the blood vessels could be viewed as the causative agent. There was

consistently found, however, one definite variation from the normal in these bleeding cases, namely a marked hypertrophy of the endometrium with cystic dilatation of many of the glands. While this was not looked upon as the etiological factor, its constant association with the bleeding was held to be of some importance. It was suggested that the agent causing the abnormal bleeding also manifested its activity by causing a mucosal hypertrophy. The picture resembled greatly an exaggeration of the normal pre-menstrual phase in the menstrual cycle. While such an analogy was striking in appearance, it was realized that no definite conclusions could be reached when based simply on histologically similar appearance. Nevertheless, in view of the established proof that a normal ovarian function controlled the menstrual cycle and thus determined the histology of the uterine mucosa, it was suggested that possibly some disturbed ovarian function caused the abnormal bleeding and the associated lesion in the mucosa of the uterus.

With this in mind we made a study of the ovaries from 18 cases. These organs varied

¹Work done under tenure of a George Blumenthal, Jr., Fellowship.

considerably in size, but the one important finding was the presence of numerous cystic follicles with degeneration of the epithelium and ova and the occurrence of cysts lined by lutein cells. These cysts varied in size from a few millimeters to 4 or 5 centimeters and could not be referred back to the normal retrogression of the corpus luteum associated with the last period. There were often several such cysts and of varying ages.

A further study of 23 additional cases, with particular care in the examination of the ovaries, substantiated the previous findings. The ovarian lesion seemed to be more consistently corpus luteum cysts, some hæmorrhagic, others not, of varying sizes. It might be of interest to note that somewhat similar ovarian lesions are present in cases of fibromyomata uteri associated with bleeding.

From the clinical side it was noted that the patients who in the previous 22 cases had been almost all about 40 years of age, in this subsequent series presented a larger group under 40; in other words, women not at or near the menopause and also some young women in their teens. It is particularly for these women that a reasonable method of therapeutic procedure must be used. Medicinal treatment, i. e., the use of styptics, and general hygienic measures, have been of no avail. Minor gynecological procedures, such as curettage, have had no or only temporary success, and so a major procedure has been resorted to, usually hysterectomy, with or without the removal of the ovaries. True, this cures the condition but at a great sacrifice to the patient. The younger women are rendered sterile by the removal of the unoffending uterus and in any instance are subjected to an unnecessarily grave operation. In those cases where the ovaries are not removed the real seat of the lesion is left behind and what is done is simply to remove the possibility of a recurrence of a symptom, namely, bleeding, by the extirpation of an organ, the uterus, the sole offense of which is not that it is diseased but that it gives rise to a symptom. The roentgen treatment is more reasonable as it attacks the diseased organ, the ovary, but here too at a great sacrifice

to the patient. She is rendered amenorrhœic and sterile, and as in the cases of complete hysterectomy, is subjected to all the symptoms of an artificially induced menopause.

Is there no other method that gives promise and that is not so mutilating, mutilating in a purely surgical sense in one type of treatment but psychologically mutilating in either group?

It seems, in view of the possible etiological significance of the ovarian lesion, that a more conservative treatment of these organs would be productive of good results both symptomatically and generally.

If a partial resection were done removing the cyst-bearing areas or, if this condition cannot be demonstrated on the surface, of even removing the greater portion of the functioning ovarian tissue, could we not hope for a promising result? Is it not reasonable to suppose that the disturbing symptomatology might be cured by the removal of the offending structure, and that the remainder of the ovarian tissue would if normal, functionate normally and that such a woman would neither have unoffending organs removed, be rendered sterile, nor be compelled to undergo the annoyance and dangers of a premature menopause?

X-ray treatment in these young women occasionally has no effect or exaggerates the condition. At best it may give an amenorrhœa of 1 to 3 years' duration at which time the periods return with a return of all the distressing hæmorrhage. Is it not then worth while attempting an operative procedure that may have a permanently beneficial result, at least until such time as organotherapy can be utilized with dependable and definite effects?

I have had as yet no experience with this operative procedure but hope that soon I shall have the opportunity of putting it into effect and also hope that it may sound reasonable and rational enough to be tried by other operators.

I wish to thank Dr. F. S. Mandlebaum, pathologist at the hospital, for the use of the material, and Dr. J. Brettauer for the privilege of studying the cases clinically.

LUNG ABSCESS FROM A PRACTICAL SURGICAL POINT OF VIEW

By WYMAN WHITTEMORE, M.D. F.A.C.S., BOSTON

ALTHOUGH medical books give lobar pneumonia as the most common etiology of lung abscess, yet in my experience it has seldom if ever been the cause. The most common cause in my series has been aspiration of blood or infected matter during, or following operations on the nose and throat and the extraction of teeth. The next most common cause has been broncho-pneumonia and there has been a rare case from septic enfaret. I have been impressed with the fact, in hearing and reading surgical papers on this subject, that so little has been said about the diagnosis. The impression that I have gotten from these papers is that the diagnosis is very simple and this is quite contrary to my beliefs, as I think that the diagnosis of a lung abscess is in many cases a most difficult one to make. I wish to go into this quite thoroughly from the point of view of the surgeon.

It is of the utmost importance to make a definite diagnosis before operation, and I believe that it can be made in the majority of cases. I do not care to take up those cases that are rather acute, which develop following or during a pneumonia, while the patient is in the hospital and under expert observation, as their diagnosis is comparatively simple, but rather the more common case that I see, which comes into the hospital 3 or 4 months or even 6 months after having some lung condition.

The three most common conditions in which a differential diagnosis must be made are: lung abscess, bronchiectasis, and a small encapsulated or interlobar empyema. The prognosis is very different in each condition, and therefore I again repeat that it is necessary to know which condition one is dealing with before operating.

If one drains a small encapsulated empyema, the outlook is very good for curing the patient. If one drains a lung abscess the outlook is fairly good for getting a permanent cure. On the other hand, if one drains a

bronchiectasis there is absolutely no hope of curing the condition and it is well to know this before operation, both from one's own point of view and from that of the patient.

There are four examinations to be made in each case and it is well for each one to be made by an expert in each line.

I. THE HISTORY

There are certain cases in which almost any one can obtain a history. These are the cases that follow aspiration. But the difficult cases are those which have had some lung infection 3 or 4 or even more months previous to coming into the hospital. For instance one may get a history that goes consistently with a sudden pneumococcus infection that might tend to throw evidence toward an encapsulated empyema that had gone unrecognized

an influenza bacillus infection of the lung and this would tend toward a bronchiectasis condition.

2. SPUTUM EXAMINATION

The sputum examination is a most important examination and one that surely must be made by an expert. Of course the first condition to be ruled out is tuberculosis, and I believe that the sputum should be examined many times before one should be satisfied that there are no tubercle bacilli. If elastic fibers are found, one does and should believe the condition to be in all probability a lung abscess. Unfortunately, in my experience, elastic fibers have been found in rather a small percentage of cases; I should say in not more than 3 or possibly 4 cases out of 10. If there are large numbers of influenza bacilli found, one can be practically sure that the condition is a bronchiectasis. Of course, in all three conditions, there will be found many other organisms, such as staphylococci, streptococci, and broken down pneumococci.

3. X-RAY EXAMINATION

The X-ray examination is probably the most important examination of all from the surgeon's point of view, as it not only makes the diagnosis in many cases, but also pretty definitely localizes the process. If the X-ray shows a definite cavity with a fluid level in it, then there is no question but that the diagnosis is lung abscess, and I believe the patient should be operated upon. If, on the other hand, the X-ray shows a definite shadow but no fluid level, then I hesitate a good deal about operating, as I believe the condition may be a persistent unresolved pneumonia or a small localized bronchiectasis. At the present moment I think there is such a thing as an unresolved pneumonia, whereas a few years ago I did not think so.

4. THE PHYSICAL EXAMINATION

I have put the physical examination last as I believe this examination is the least important of the four, because in so many cases this examination is so indefinite. Of course in a few cases one finds all the classical signs, but in my experience these cases are few and far between. In some cases there is nothing found but a little dullness or a few râles or both; indeed, in one case there was nothing discovered on physical examination and yet a lung abscess was found and drained at operation.

If the man who is going to do the operation will carefully consider these four examinations and weigh the evidence, I think he will have a very good idea before operation just which condition he is dealing with.

Having made the diagnosis of lung abscess, what is the correct treatment for it? Should one operate on all cases of lung abscess? We know that somewhere between 6 and 10 cases out of 100 get well without operation. We also know that there are very grave dangers hanging over the patient if we do not operate. There is danger of the infection spreading and there is danger of a brain abscess developing and of course danger of a general septicæmia or pyæmia. It seems to me a very important and very delicate decision to make as to whether or not one should operate immediately. Sometimes the patient

is in such desperate condition that the surgeon knows that any surgical procedure will surely kill the patient and then he can wait 24 hours with a clear conscience. Perhaps at the end of 24 hours the patient is a little better and then he can again put off operation. This happened in one case that I saw recently and operation was put off each day and the patient finally got well without operation. But this is the exception to the rule. I believe that it is justifiable in some cases to put off operation a few days to see whether or not the patient will improve. This applies to the acute cases; probably all chronic cases should be operated on. As a general rule, I believe all cases of lung abscess should be operated upon unless there is some good, definite reason for not operating on them.

TECHNIQUE

The operative technique is one in which there is a certain amount of controversy. However, this may be of rather minor importance and probably each man will and naturally should stick to that technique which has given him the best results. There are some surgeons who stick a long needle through the chest wall and into the lung before operating. I have never done this and never intend to do it, as I see little to be gained by it and a certain amount of danger to be feared from it. This technique is very old fashioned surgery and was done years ago for diagnosis purposes before medical men could make as definite a diagnosis previous to operation as is now possible. One certainly does not do it now-a-days in order to make a diagnosis as that is or should be made by the previously spoken of methods. I do not believe it is necessary in order to localize the process. The process can be and is localized by the X-ray and also by physical signs. If aspiration is done and the lung abscess is not found, surely operation should not be abandoned because one could not find the abscess with a needle. In aspirating in a blind way, one may go through a place where the lung is not adherent to the costal pleura, as it is difficult to tell before operation whether or not the lung and the costal pleura are adherent in every case. One may be able to guess, but

THE PHYSIOLOGY OF OVULATION¹

A PRELIMINARY REPORT

By S. S. SCHOCHET, M. D. Chicago

WHILE extensive researches have been made on the mechanism, the histological changes, that occur in menstruation, our knowledge is incomplete as to the exact cause of this function. There are some who look upon menstruation as a needless and useless function, which causes much discomfort and impedes woman's competitive progress. There is one school that holds the view that menstruation is a direct result of ovulation. The second view is that ovulation and menstruation are two distinct and independent functions. The third view is that it is due to a hormone present in the corpus luteum. It is for this reason that I mention the subject of menstruation in discussing the physiology of ovulation.

Ovulation includes the growth, development,

by which the extrusion of the ovum becomes possible. During the growth and maturation of the ovum, the cells of the graafian follicle, after increasing greatly in number, begin to disintegrate and liquefy. From then onward, due, it is thought, to the different chemical composition of the liquor, thus forming in the follicle, or the general content of the follicle, an endosmosis seems to be induced by which the liquor folliculi increases to a far greater extent than is thought possible to result from the liquefaction of the follicular cells. The follicle so distends that, following the direction of least resistance, one side of it approaches the free surface of the ovary, producing a bulging in this surface, dispersing the ovarian stroma, and thinning its tunica albuginea and the overlying epithelium (cuboidal epithelium that covers the ovary) and results in a compression of the blood capillaries intervening between it, and the surface of the ovary. Clark has shown that capillaries in the summit of the bulging are practically obliterated by the

pressure. It is supposed that nourishment is thus cut off from the ovarian stroma under compression, and the stroma atrophies until its resistance is less than the pressure exerted by the distending follicle, and the content of the follicle bursts into the body cavity. The liquefying of the follicular cells having continued until the ovum is free within the follicle, the ovum is extruded into the body cavity with the discharge of the liquor folliculi.

It was conceived by the speaker that the liquor folliculi might possess some special digestive action upon the resisting tissues thus aiding in the process by which the ovum is extruded.

Accordingly a series of experiments were made, the result of which may be of interest. The work was undertaken to determine:

1. Whether the liquor folliculi has a digestive action and if so does it possess a specific enzyme that can be demonstrated by dialysis or other tests.
2. If it possessed such action, under what conditions is it altered? Is it decreased in pathological conditions?
3. Can a quantitative estimate of its strength and amount be determined?

MATERIALS AND METHODS

Obviously only small quantities of the liquor can be obtained at best. Human material is not available sufficiently fresh and in sufficient abundance. Ovaries of the sexually mature hog (*Sus Scrofa*) were used as these could be very readily obtained in the slaughter houses. All histological observations of these indicate, that the process of the production of the liquor folliculi in the graafian follicle and the process of extrusion of the ovum are the same as in the human; and it is logical to assume that the liquor plays the same role as in the human ovulation, and that any results indicating its physiological action in the hog must be similar to the human.

In the experiments, amniotic fluid and fluid from ovarian cysts of the hog were used for comparison with the liquor folliculi and also fluid from human ovarian cysts. The liquor was obtained under aseptical conditions to avoid any error due to bacterial activity.

The technique used in this experimental work is based on the principles of the Abderhalden dialyzation reaction. Briefly summarized, it consists in (1) the preparation of the material to be tested, (2) the process of obtaining the liquor, (3) the preparation of the diffusion tubes, (4) the test, (5) dialyzation, and (6) the comparison with controls.

Pieces of muscle, fibrous tissue, and muscle were used. These were boiled in distilled water for 5 minutes, and the filtrate tested for substances reacting with ninhydrin and the biuret reaction. This was repeated until the filtrate failed to give a reaction with one cubic centimeter of ninhydrin on boiling one minute.

Schlercher and Schull No. 579 dialyzing tubes were used. These were first carefully tested with albumin to insure impermeability to it. They were boiled for 5 minutes just before each test.

In the test small quantities of the liquor folliculi were introduced into the diffusion tubes together with a small piece of muscle connective tissue and ovarian tissue, prepared as above, separate tubes being used for each test. A layer of xylene was placed upon the fluids in the dialyzer and without to prevent the growth of bacteria and to prevent evaporation.

Controls were made with exactly the same technique using amniotic fluid, normal saline, and cystic fluid, instead of liquor folliculi. The period of incubation was 24 hours, the temperature 38°C. The filtrate or the fluid surrounding the dialyzers was tested with ninhydrin and the biuret test.

The results obtained may be tabulated as follows:

	Ovarian Tissue	Muscle	Connective Tissue
Liquor folliculi	++++	++	++
Cystic fluid (small cysts) (hog)	++	+	+
Amniotic fluid (human)	~	-	-
Normal saline	~	-	-

OVARIAN TRANSPLANTATION

Small pieces of ovary were then transplanted in the anterior chamber of the eye. In these experiments the albino rat was used, and homoplastic grafts were employed. The exact technique will be given in detail in a later report. In these experiments it was possible to watch the growth of the follicles. In the rat ovulation takes place 24 hours after parturition and usually every 30 days.

In the rat demonstrated the transplant was placed 8 weeks ago. The right eye was removed after the follicles ruptured. Sections show free ova in the anterior chamber and the transplanted ovarian tissue still viable. Transplants in the liver and in the anterior abdominal wall have also been successful. A series of experiments at fertilization in these transplants is being undertaken as is a series with the intravital stains.

As the work is incomplete, certain observations only are recorded:

1. Ovulation is due to a specific enzyme, its nature being similar to the enzyme erepsin. Apparently there are other proteolytic enzymes in the liquor folliculi; also a lipase.

2. Atresia of the follicles is due to this proteolytic enzyme or enzymes.

3. That these experiments offer a rational explanation for the use of thyroid extract and corpus luteum in sterility.

The author wishes to acknowledge his indebtedness to Professor Ranson of Northwestern University for many helpful suggestions in the experiments on transplantation.



Fig. 1. Photograph of uterine tumor taken soon after removal. Uterus is opened anteriorly and the uterine cavity in right half is seen filled with several large, liver-colored polypi. Comedo-like areas stand out everywhere above the cut surface of the uterus, but these are not cystic and contain no fluid.

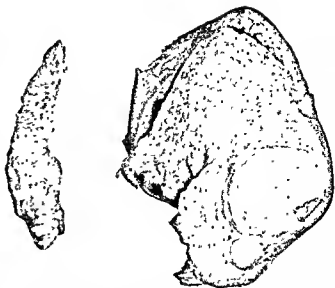


Fig. 2. Low power photograph of section of uterine tumor and polyp after hardening showing peculiar meshwork arrangement of tissue. Light areas are muscle and dark areas are masses of interglandular stroma. Two encapsulated myomata are seen.

On examination, the abdomen was found to be normal in appearance except for a slight fullness above the symphysis, which, on vaginal examination, was found to be due to the uterine tumor.

Vaginal examination. The hymen was virginal and there was no infection. The cervix was somewhat enlarged and fibrous, but otherwise normal. Filling the pelvis and extending about two fingers' breadths above the symphysis was a fairly firm, irregular, nodular, but movable, uterine tumor. One distinct nodule could be felt in the left of the fundus. The ovaries were normal in size and there was no pelvic tenderness. In view of the history and pelvic findings a probable diagnosis was made of multiple myomata of the uterus, with one nodule, probably submucous, causing the metrorrhagia.

The patient entered the Hospital for Women and was operated upon January 13, 1913. Hospital No. 2125. The ether examination confirmed the office findings, and at operation a panhysteromyectomy, a right salpingo-oophorectomy, a left salpingectomy, and an appendectomy were done. The round ligaments were sutured into the vaginal vault, and a small cigarette drain placed into the vagina. At operation the left ovary was normal in size and appearance and was left in, as the patient insisted this be done, as she dreaded an artificial menopause.

Before closing the abdomen the uterine tumor was opened, according to our usual procedure, and we at once found we were dealing with an unusual condition. The external surface of the uterus was smooth everywhere, but slightly irregular, due to the presence of several small interstitial myomata. The right tube and ovary were normal. On opening the tumor (Fig. 1), the uterine cavity was found to contain one large and several smaller liver-

colored polypi, with a smooth surface. The mucous membrane lining the cavity was smooth and gelatinous in appearance, but not thickened. The most striking thing about the tumor was the peculiar appearance of the uterine walls. From the mucosa to the peritoneal surface, the walls were everywhere converted into a coarse meshwork by tough bands of muscle or fibrous tissue running in all directions, and in the interstices of the meshwork and standing out prominently above the cut surface were small comedo-like areas of an appearance we had never seen before. Pressure on the sides of the tumor would cause these areas to stand out even more prominently, giving much the ap-



almost total absence of necrosis.



Fig. 4 Photomicrograph of section of polyp showing predominance of stroma with a few uterine glands.

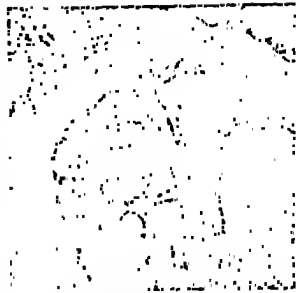


Fig. 5 Photograph of section near peritoneal surface of tumor showing masses of interglandular stroma infiltrating and dividing the uterine muscle into a coarse meshwork. The total absence of glands is most striking.

pearance that one gets in a comedo carcinoma of the breast. These comedo-like areas were not friable as in a carcinoma, and contained no fluid of any kind. They were elevated above the surface, while in a diffuse adenomyoma we would have numerous depressions, with characteristic chocolate-colored fluid. We could not make a diagnosis from the specimen, and the photograph was made in less than an hour after removal of the tumor.

The specimen (Gyn. Path No. 22897) consists of an enlarged, slightly irregular and nodular uterus, opened on the anterior surface, together with the right tube and ovary. The uterus is 13 centimeters long, 11 centimeters broad and 10.5 centimeters in its anteroposterior diameter. It is slightly irregular in contour, due to the presence of several small, firm, encapsulated nodules within its walls. Anteriorly and posteriorly it is smooth and glistening and has no adhesions. One small pedunculated myoma, 2 by 3 centimeters, is found on the left lateral surface, attached by a small pedicle. The cervix is normal in appearance, somewhat fibrous and thickened, while the cervical mucous membrane is normal.

The uterine cavity measures 8.5 centimeters in its greatest length, is smooth and gelatinous in appearance and the mucous membrane is quite thin, measuring scarcely 1 millimeter in thickness. Projecting from the upper portion of the uterine walls and filling the uterine cavity is one large, reddish polyp, and several smaller ones. The largest measures 3.5 centimeters in length and 1.5 centimeters in diameter. These polypi are all smooth and do not look malignant. The uterine walls are greatly thickened, in places 8.5 centimeters in width, due in some degree to the presence

of several interstitial and encapsulated myomata within the walls, one measuring 3.5 centimeters in diameter, just above the cervix, and four smaller ones in various portions of the uterine wall. These are all firm, show no degeneration and are typical myomata with a definite capsule.

The freshly cut specimen presents a striking appearance (Fig. 2). For about 2 centimeters the tip of the large uterine polyp, when cut, has a grayish, gelatinous appearance, resembling the raw-pork look of a uterine sarcoma, and above this point we have the remainder of the polyp and all the walls of the uterus converted into a peculiar mottled appearing or coarse meshwork. Running everywhere throughout the tumor are tough, thin bands of fibrous or muscular tissue which make up the framework of this structure, while in the interstices are whitish areas, tough in consistency, from 0.5 millimeters to 2 millimeters in diameter, not friable and apparently intimately connected with the surrounding tissue, and these stand out prominently everywhere above the cut surface. There are no depressions in these areas and no secretion can be squeezed out. It is noticeable that they are present everywhere from the uterine polyp in the cavity to within 0.5 millimeters of the serosal surface of the uterus, with the single exception that they do not penetrate the capsules of the solitary myomata, which seem to be specially resistant to their infiltration, and in no place do these masses penetrate the serosal surface of the uterus.

Histologically the picture is even more striking, and at first glance resembles that seen in sarcoma, except that here we have finger-like growths split-

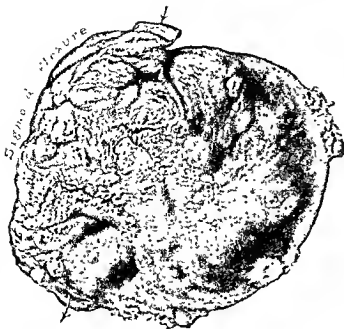


Fig. 6. Drawing of ovarian tumor and adherent sigmoid (two-thirds natural size), showing almost complete obstruction of sigmoid due to growth. Upper and lower ends of sigmoid shown by arrows.



Fig. 7. Ovarian tumor opened, showing cavity of cyst lined with many liver-colored polypi, irregular in size,

ting the muscle, but showing no malignant changes in its cells or otherwise.

The mucosa of the uterine cavity is only seen in a few places, and here is much thinner and more compressed than normal, and the cells are small and cuboidal from pressure. They are not swollen and generally retain their staining qualities. There are no surface depressions representing the opening of the glands. Examination of the mucosa forming the tip of the large polyp (Fig. 3) shows a greatly thickened membrane measuring 12 millimeters in thickness in places, the normal single layer of columnar epithelium having disappeared. The almost total extermination of the uterine glands is most striking, and only at rare intervals can one be found in the extreme tip of the polyp (Fig. 4). In these places the glands are much compressed, and in only one section can a gland be found which has penetrated the musculature, as in an ordinary adenomyoma, and then only for a short distance.

On microscopic examination it is at once apparent that an unusual process or overgrowth, has taken place in the interglandular stroma of the endometrium, and that beginning in the central and large uterine polyp it has gradually strangulated the uterine glands and then extended by a direct growth throughout the walls of the uterus, repeating the same process of strangulation in respect to the muscle bundles. These stroma masses consist of an embryonic tissue made up of oval and spindle-shaped nuclei closely packed together, the protoplasmic processes of the cells not being seen because of the compression. The individual stroma cells of the mucosa are slightly compressed, but other-

wise normal, and show no evidence of degeneration or malignant change, and the almost total lack of breaking down is remarkable in a growth of this kind. In places one sees on the surface a few clusters of polymorphonuclear cells, and within the masses of stroma occasionally a small collection of round cells. These stromal masses are highly vascularized, containing many fair-sized arteries and thin-walled veins. Within the stroma covering the surface of the polyp there is a marked diapedesis of red blood cells giving the appearance of a premenstrual endometrium.

The pathological process beginning in the polyp is really an orderly overgrowth of the stroma, which has gradually exterminated the uterine glands by strangulation, and then in the same manner has attacked the uterine musculature. At first the stromal masses have apparently found a crevice be-

lieved with chocolate-colored fluid resembling the spaces seen in adenomyoma of the uterus.

one of strangulation, for we find in many places broad stromal masses with a small island of muscle in the midst, the muscle apparently squeezed out of existence and showing by its staining properties a beginning degeneration, but no necrosis, due probably to the extensive vascularization of the tissue. The invasion of the stroma, as a rule, has taken place parallel to the muscle columns, splitting the uterus into a coarse meshwork, but in many areas we find the stromal masses attacking the muscle columns at right angles, filtering through a weak-



Fig. 8. Low power photograph of section of ovary

ened spot, and then spreading out in both directions, with a pincer-like process, until the muscle



Fig. 10. Low power photograph of polyp of ovarian cyst, showing framework of stroma but no glands and single layer of surface epithelium



Fig. 9. Section of ovarian cyst wall, showing masses of stroma but with many large atypical uterine glands, many of the glands filled with degenerated blood

nuclei (Fig. 5). Here the growth is not so compressed and the individual cells can be made out with their protoplasmic processes firmly attached to the nearest muscle cells or columns. In places it is very difficult to distinguish between stromal and muscle cells except by the more intense staining powers of the stroma.

This process of infiltration of the muscle bundles and the subsequent strangulation has met with no resistance except in the region of the encapsulated myomata, and here the dense, tough capsule has seemed successfully to prevent the entrance of the unusual stromal growth. This growth from its beginning in the mucosa has involved, diffusely and by direct continuity, all the walls of the uterus, and is then a connective-tissue tumor, starting in the interglandular stroma, with all the characteristics of an adenomyoma, but without glands, apparently non-malignant but definitely infiltrating, a type we have hitherto not seen.

The subsequent history of this case is most unusual. Although the picture was not that of a malignant tumor, this growth was so unusual in its characteristics that the patient was watched very carefully and reported at intervals of 3 or 4 months for a period of 4 years. On each occasion the pelvic findings were normal, the left ovary was normal in size and not enlarged or tender. During this period of 4 years the patient consistently maintained that at regular monthly intervals she menstruated for a part of one day each month. Just as constantly I assured her she must be mistaken, for a panhysterectomy had been done and menstruation was out of the question.

The patient was last examined in July, 1916, and everything found normal. On January 1, 1917, exactly 4 years after the hysterectomy and 6

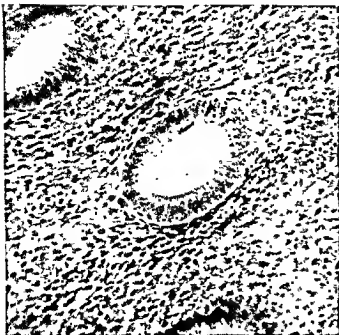


Fig. 11. High power photomicrograph of section from wall of ovarian cyst showing normal stroma and oval glands with a single layer of high columnar epithelium.

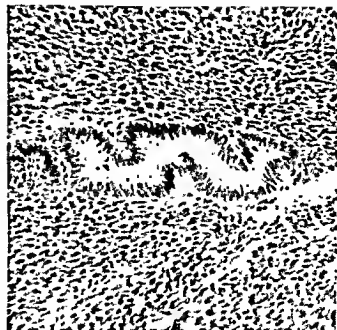


Fig. 12. High power photomicrograph of section from wall of ovarian cyst showing stroma and tortuous gland cut lengthwise.

months following the last examination, she again consulted me in regard to her condition. Every thing had been as usual until 6 weeks before, in November, 1916, when the patient noticed that she had obstinate constipation, with rather flattened stools, and this was followed by a period of diarrhoea. For 2 weeks previous to the second admission there had been severe cramp-like pains in the middle and slightly to the right side of the abdomen, and, as she volunteered, as though from a partial obstruction. This was not accompanied by nausea, but there had been some slight loss of weight. Examination at this time showed a definitely distended loop of large intestine in the middle line of the abdomen, with well-marked peristalsis and distinct gurgling, and apparently an hypertrophy of the upper portion of the bowel.

On vaginal examination the old drainage tract in the upper vaginal vault had opened slightly, and through this tract could be felt an irregular, nodular, but cystic mass in the region of the left ovary. This was slightly movable and was evidently the cause of the partial obstruction of the bowel. It was thought we were dealing with a malignant ovarian tumor, and at once we thought of a late recurrence of the original tumor in the ovary.

The patient entered the Hospital for Women (Hist. No 6434, Gyn. 1901) and was operated upon January 3, 1917. At operation a semicystic tumor, about the size of a grapefruit, was found occupying the left lower portion of the pelvis. Over the top of this cystic mass, and firmly attached to it, and almost completely obstructed by it, coiled the sigmoid flexure and the upper portion of the rectum, displaced by the growth toward the right. The

ovarian tumor was densely adherent to the lateral wall of the pelvis, was extremely vascular, and there was a marked infiltration of the bowel wall. The bladder was adherent over the anterior surface. It was found necessary to remove about 20 centi-



Fig. 13. Low power photograph of section of ovarian tumor, showing in one area fairly normal uterine glands and stroma and in adjacent area large, dilated, atypical glands and dense stroma. Glands in places seen filled with degenerated blood.



Fig. 14 Masses of stroma cells, irregular and dilated gland spaces, with single layer of high columnar epithelium and masses of muscle tissue from ovarian cyst wall

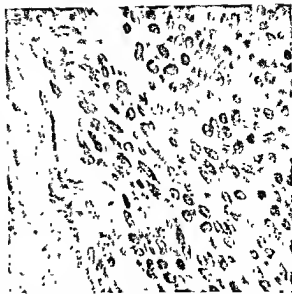


Fig. 15 High power photograph of stroma from ovarian cyst wall. Stroma cells seen cut in cross section and some lengthwise.

meters of the sigmoid and upper part of the rectum with the ovarian tumor, and an end-to-end anastomosis was done (Fig 6). The outer portion of the ovarian tumor was so adherent to the pelvic wall that it was freed with difficulty, and during the removal the cyst was ruptured. When the rupture took place several ounces of dirty, chocolate-colored fluid and several reddish, liver-colored polypi escaped.

For 10 days the patient made a good recovery except for a slight infection of the abdominal wound, but on the tenth day was seized with a severe attack of abdominal pain, nausea and vomiting, and died from what was apparently a mesenteric thrombosis. No autopsy was permitted. The ovarian tumor removed at the second operation is also unusual.

The gross specimen (Gyn Path No 2289732) consists of an ovarian cyst of the left ovary, about

and right side is attached the sigmoid, which curves over its surface. The tumor measures 16 centimeters by 12 centimeters by 10 centimeters while 20

The outer and every-
id is closely

moid which forms the thickest portion of the tumor wall we find a tough and cartilaginous

and several large loculi, connecting by small openings in their septa with the large central cavity of the cyst. The largest of these loculi shown in the drawing measures 3.5 centimeters by 2 centimeters in diameter. The inner surface of these smaller cystic areas corresponds in appearance to the interior of the large cyst. The main cavity of the tumor measures 11 centimeters by 7 centimeters by 6 centimeters. The interior of this cavity, like that of the several loculi connecting with it, is lined by a pinkish membrane with a smooth surface, but thrown up everywhere into folds (Fig 8) and polypoid-like masses, very much resembling in appearance the polyp found in the uterus 4 years previously. These polypi have a broad base and vary in length from a slight elevation of the surface membrane to some which are 3 centimeters in length. Several polypi which had become completely detached from the surrounding wall were floating free in the cyst and escaped during its removal. Histologically, this ovarian tumor presents an unusual and varied picture depending on the portion of the wall from which the sections are taken.

Microscopic examination at once reveals that we are dealing here with an ovarian cyst made up almost entirely of uterine tissue (Fig. 9), the interior of the cyst corresponding to the uterine cavity and filled with blood while the walls contain many normal glands and others which show glandular dilatation. A pathological change has also occurred and we have an overgrowth of the interglandular stroma (Fig. 10), much resembling that seen 4 years previously in the uterus.

The walls of this cystic tumor are composed, for the most part, of more or less normal ovarian stroma, embryonic connective tissue, with here and there a well-defined hundle or column of smooth muscle. In places the tissue is much compressed and in others cedematous. Very few of the normal ovarian elements can be found, but one occasionally finds in the wall a graafian follicle.

The cavity of the large cyst and that of the sev-

placed and are oval and vesicular. Directly beneath the surface epithelium is a well-defined basement membrane, separating it from the normal interglandular stroma. Sections from the thickest portions of the cyst wall give the exact picture of a normal endometrium of the premenstrual type. We find normal-appearing uterine glands in large numbers (Fig. 11), oval in cross-section and wavy when cut longitudinally (Fig. 12). These glands open, for the most part, into the central cavity of the cyst. In places, certain of these glands are found filled with a substance resembling colloid (Fig. 9). In other places, from the cyst wall we find areas where the uterine glands are much distorted (Fig. 13), greatly dilated, and resembling a typical glandular dilatation. In still other sections from the thinner portions of the cyst wall the histological picture greatly resembles the specimen of the original tumor (Fig. 14). The lining membrane of the cyst is seen thrown up into many polypoid-like masses (Fig. 10), each with a broad base, the surface covered with normal uterine mucosa, but with a total absence of glands. Beneath the mucosa in these areas we find an interglandular stroma of varying density, but apparently of a normal type, with closely packed oval and spindle-shaped nuclei and highly vascular. Everywhere in the stroma there is a marked diapedesis of red blood cells throughout the endometrium. The uterine glands show no tendency to invade the underlying musculature, but in those areas where we find masses of stroma unaccompanied by glands, we see the same tendency on the part of the stroma to infiltrate and strangle the muscle as in the original uterine tumor (Fig. 10). The musculature of this tumor lies directly beneath

this endometrium and is made up of several well-defined, interlacing bundles or columns of smooth muscle tissue. These muscle columns are normal when underlying the glandular portions of the growth, but become degenerated when invaded by the stromal masses (Fig. 15).

The mucous membrane of the intestine is normal and the muscular coats of the bowel have not been invaded, but this infiltration of the tissue has gone around the sigmoid, so that for fully one-half of its circumference it is surrounded and compressed by this growth, thus causing the almost complete obstruction.

These two specimens, the one a diffuse adenomyoma of the uterus without glands, the other a large uterine growth of the ovary, are interesting not only from the menstrual history accompanying them, but from their morphological structures, and bring up many interesting queries as to their etiology.

From the time in 1896 when von Recklinghausen's (1) work on adenomyoma appeared and when at about the same time Cullen (2) published his observations, a violent controversy has been waged in regard to the etiology of adenomyomata of the uterus. It is not necessary to review the vast literature and many theories that have been evolved, for nearly every pathologist has taken some part in the discussion. It is mostly due to the work of Cullen that nearly all investigators at the present time are agreed that the great majority of cases of adenomyomata of the uterus have their origin from the uterine mucosa. The present specimen from the uterus bears out Cullen's theory, as the process can be plainly seen beginning in the stroma of the uterine polyp, and can be traced directly for a considerable distance throughout the walls of the uterus, in many places nearly to the serosal surface.

In regard to the history of regular menstruation in this case following the hysterectomy, surgeons have long recognized that when portions of certain organs are removed there is a corresponding hypertrophy and functioning of the remainder, and it is a natural process then that the uterine glands in the ovarian cyst should take on the active work of the uterus and maintain menstruation regularly. But it is a decided matter of wonder as to just what the stimulus might

be that would start up, after three and a half years of apparently normal functioning, an active hypertrophy of the uterine tissue in the ovary, so that in less than six months, under careful observation, there should have developed a cystic tumor the size of the present one.

The etiology of the ovarian tumor, however, is not so clear. We are dealing in the second tumor with an ovarian cyst, containing uterine tissue, muscle, glands, and stroma, the stroma resembling that of its prototype in the uterus. We are not then dealing with a teratoma of the ovary, for no other structures are seen, as we would most certainly find in a teratoma.

It has long been known that at rare intervals, ovaries have been found containing a small collection of uterine glands and stroma.

Russell (3), in 1898, published a report of "Aberrant Portions of the Muellerian Duct Found in an Ovary," and in his case demonstrated clearly an anomalous development of portions of the muellerian duct in germinal epithelium.

That certain of the ovarian tumors may originate from wolffian remains in the hilum of the ovary is probable and Olshausen and Doran have supported this view in regard to the origin of papillomatous tumors. On the other hand Williams (4) has shown in his paper on "Papillomatous Tumors of the Ovary" that epithelial growths may arise independently of wolffian remains.

Waldeyer (5) came to the conclusion that nearly all of the ovarian tumors originated from a proliferation of the surface epithelium

of the ovary, while it has been clearly demonstrated by Marchand (6) that there may at times be an extension of the epithelium of the fallopian tube which by its down growth gives rise to cystic structures in the ovary.

Dr. Welch recently suggested in looking over these specimens that portions of ovarian tissue might be found on careful search in the uterus, as well as uterine tissue in the ovary, a suggestion based on the wolffian theory of von Recklinghausen (1) that when the wolffian and muellerian ducts cross in early foetal life, there may be at times an intermingling or confluence of these tissues. Examination of the uterine specimen, however, does not show any evidence to support this suggestion. While we have no conclusive proof in this case that this uterine tissue in the ovary originates from remains of the muellerian ducts, we do know that such cases have been clearly proved and we are further strengthened in our opinion of the muellerian origin of the growth by the fact that the same pathological change or overgrowth of the stroma has taken place in the ovarian tumor that occurred in its prototype in the uterine stroma.

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DISCUSSION BY CHARLES C. NORRIS, PHILADELPHIA

Dr. Casler's case is an extremely interesting one.

of a neoplasm and the other although, macroscopically, practically normal was found on histological examination to contain a considerable amount of endometrium. A picture of this specimen has been incorporated by Hurdon in her chapter on "Gynecological Pathology" in Kelly and Noble's *Gynecology and Abdominal Surgery*. I have had a very similar case

Two years ago this summer a young woman, twenty-nine years of age came to me suffering from a pelvic inflammatory disease, for which operation was advised. A curettage, bilateral salpingectomy, left oophorectomy, and appendectomy were performed. The tubes presented the usual appearance of small hydrosalpinges. The ovary showed a number of adhesions and was slightly enlarged, the enlargement being due to a graafian follicle cyst, which was situated in the outer pole of the organ and constituted about one-third its bulk. A normal corpus luteum was also present. On opening the ovary nothing further was noticed,

but when the histological sections came through, an area of endometrium was found. This was situated in the center of the organ and about 6 to 8 millimeters from the periphery. It was about 6 to 7 millimeters in diameter, and consisted of a small cystic space containing a little free blood; this space was lined by endometrium which was identical to that of the uterus. It was about the thickness of the normal endometrium. The endometrium rested upon a narrow zone of unstriped muscle similar to that of the normal myometrium. Although there was apparently no exit from this cystic space the latter was not entirely filled with blood and the lining endometrium showed no evidence of intracystic pressure, such as is so common in some of the pinched off glands found in ordinary uterine adenomyomata. The endometrium in the ovary was similar to that removed from the uterus by curettage and was of the same periodicity, that is, both were of the interval type, as described by Adler and Hitchmann. The fact that, the endometrium in the ovary, although encapsulated and evidently functioning, and that no exit from the cyst could be detected, and that it showed no evidence of intracystic pressure, suggests that perhaps at certain intervals this small space may have ruptured on the surface of the ovary like a graafian follicle and again healed over, this process repeating itself at certain periods. However, histological examination failed to show scar tissue, such as might be expected to be present if such had been the case. This possibly is of interest in its bearing upon Dr. Casler's case, in which case you will remember a panhysterectomy had been performed and menstruation presumably from the ovary occurred through a sinus. Pre-

suming that this was a true menstruation and not a mere bleeding from an inflammatory area, it is possible a small rupture may have occurred in the wall of the ovarian cyst each month, just as a graafian follicle ruptures at such periods, and such ruptures being followed by an escape of blood through the sinus into the vagina. Indeed, this appears to be the only way in which a true menstruation could have occurred, as I gather from the description of Dr. Casler's case that the endometrium-bearing area was confined to the inner surface of the specimen. My case was very similar to Russell's, except that in his a tumor was present in the opposite ovary, while in mine the opposite ovary was, macroscopically, normal.

Muellerian inclusions in the ovary bring up the question of such rests being the starting-point for ovarian neoplasms. Thus in Russell's case we have no knowledge of whether or no the neoplastic ovary originally contained muellerian tissue. In Dr. Casler's case, however, it is very evident that it did, and if we accept the ovary in his case as being the seat of a true tumor and not merely a large retention cyst, such as sometimes develops in conserved ovaries, due to defective blood supply, a rather strong case might readily be made out for the theory of such rests subsequently developing tumors. The fact, however, that ovarian tumors are common and muellerian rests in the ovary very rare seems to disprove such an assumption, for were rests a regular developing point for tumors they should be more frequent than are the latter, whereas they are far more rare. In my case the opposite ovary was, macroscopically, normal, and 18 months after operation the patient was well.

LATE HEREDITARY SYPHILIS

MEMBRANOUS PERICOLITIS, PERIENTERITIS, OR CHRONIC ABDOMINAL SYNDROME

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SINCE Jackson in America, Lane in England, and Wilms in Germany created this new chapter in abdominal pathology by their clinical observations and research, a vast and modern medical and surgical bibliography has been made despite the short lapse of time—a decennial—since the first publication of Jackson. Including within this conception of the “chronic abdomen” some facts previously known and studied in France, especially by Glénard in 1889, numerous physicians and surgeons have studied eagerly the subject—an old acquaintance of theirs brought up to date by the Anglo-Americanism of the twentieth century.

We do not intend to make a synthetical study of the bibliography, but only to cite the most modern works among English, French, and American authors, without forgetting, to be sure, those of Argentine. Many of the works cited (Lane, Sorrel, Leveuf, etc.) are studies of membranous perienteritis and chronic abdominal syndrome, in which, after an historical review, the authors enter into the study of the etiology, pathogenesis, pathology, symptomatology, diagnosis, prognosis, and lastly the surgical treatment, with differences only as far as the operative process to be employed is concerned. In none of the numerous works reviewed have we found mention or even suspicion of syphilitic etiology, either under the form of acquired or hereditary infection. Lane praised mercurial preparations for their efficacy without suspecting a syphilitic etiology. Most of them analyze and criticize the various theories of pathogenesis of the membranes and their connection with the gastro-intestinal disturbances and their effect on the general condition. The theories of pathogenesis which have been best received and on which are

based the different operative procedures, are the mechanical theory of Lane, the congenital theory of Mayo, and the inflammatory theory of Jackson.

It is not our intention to discuss in detail these various theories, but we do wish to express our absolute disagreement with Lane's mechanical theory (1). We believe that the theories of Mayo and Jackson contain a certain amount of truth, but we also wish to call attention to the fact that Jackson, in speaking of the inflammatory origin of this condition does not mention the cause of the infection producing the inflammation, a cause which, in many cases, is obscure and at times closely related to hereditary syphilis.

We give below a comprehensive series of medical and surgical clinical observations, which, although the number is not large, are typical and prove a fact hitherto not mentioned; that there is a relation between hereditary syphilis, perienteritis, and the chronic abdominal syndrome. These cases have been referred to on previous occasions (3).

Our material is divided into two groups according to whether the patients have been studied from an exclusively medical point of view or with surgical control. The first group of observations contains purely clinical material and the diagnoses are supported by careful radiological examinations made by noted specialists whose reports and roentgenograms are shown below. The clinical history will be followed by a clinical commentary on the etiology, pathology, and therapeutics.

The second group comprises the medico-surgical material or those cases in which surgical intervention has permitted an observation of the nature of the lesions. These cases are highly illustrative of the efficacy of the surgical and specific medicinal regimen.

CLINICAL OBSERVATION

CASE 1. A. D., age 28, married at 19. The wife has not become pregnant and is suffering from hereditary infection, with acute dysmenorrhea and numerous dysendocrine and gastro-intestinal symptoms which were relieved by specific treatment. The father died at the age of 43, from liver disease, the exact nature of which the patient cannot specify. The mother died at the age of 66, of cancer of the breast. She had had 12 pregnancies, 9 of which had ended in abortions or stillbirths; one son died at the age of 10; two are living adults, one of whom is the patient in question. The patient had had measles, whooping cough, and jaundice while a child. At the age of 28 he had a second attack of jaundice. As far back as he can remember from earliest childhood until 26 years of age, he has suffered from headaches and has always been constipated. To overcome this, it has always been necessary for him to use laxatives and strict dietetic measures which became finally ineffective. At the age of 24, the patient suffered, for 24 hours, from an acute attack of diarrhoea. From the age of 26 on, he has had very intense paroxysmal attacks of epigastralgia, at which times the tongue became thickly coated. There were acid eructations, very intense meteorism, a sense of obstruction and pain in the right half of the abdomen, cardiac arrhythmia, and at one time a paroxysm of transient tachycardia. In spite of the varied medical treatment, the gastro-intestinal disturbances have increased in intensity becoming more pronounced in the evening, and greatly exaggerated in the summer.

Physical examination, June 17, 1918, showed the following: premature baldness, inequality of pupils, premature loss of teeth accentuated by intense caries, pronounced aortitis, generalized arteriosclerosis, distended abdomen with tenderness over

found in the patient. To hereditary syphilis, we attribute the aortitis, premature arteriosclerosis, the double hydrocele and pluriglandular dysendoc-

amination of the digestive apparatus which showed a slightly ptotic stomach with rather lowered tonus but with rather good peristalsis; a normal pylorus and duodenum, and without retention after 6 hours. There was no localized pain, the cæcum was spastic. There flexure mal.

right pericolicitis with a tendency to intestinal spasm. The patient was subjected to treatment for 1 month with Van Swieten's solution, with the follow-

ing results: improvement in general condition; marked diminution of headaches; daily evacuations of the bowels, spontaneous but slight; fair appetite.

On physical examination we found a greatly reduced meteorism and increase in the flatulence. Each were given. As this mercurial treatment was continued, the following modifications were noted: The patient's general condition improved; the tongue gradually cleared up; the spontaneous pains disappeared as did pain on palpation of the right half of the abdomen; intestinal evacuation became easier and more abundant. On conclusion of the treatment with gray oil injections which yielded

Later, a monthly treatment extending over 12 days, by means of gray oil suppositories was prescribed. This was carried out by the patient during the four months, November to March. Throughout this period calcined magnesia was given fortnightly by our prescription, in doses of a teaspoonful every fortnight. The patient's general condition could not be better; the abdominal examination was negative, the patient had a good appetite and his bowels voided naturally every day. The double hydrocele vanished. The dysendocrine phenomena continued to grow less.

only to specific treatment. She has had one child born dead and 8 full-term children. Many of them are of sluggish temperament, one girl was operated upon for appendicitis when 14 years old. The 8 children show characteristic stigmata of tertiary hereditary dystrophic infection. The patient in question menstruated at 12, the courses being regular as to period, variable in duration, and abundant in quantity. From 10 years on, she grew slowly and progressively constipated until she became extremely costive, slightly affected by ordinary laxa-

from the onset, by Dr. Maximo Gastro. Convalescence was uneventful. The appendix was found to be very much inflamed with a small quantity of fibrinous exudate. The intestinal stasis persisted for 2 months following the operation.

On examination in July, 1918, the following peculiarities were noted: stigmata of skin, of bones, skeleton, teeth, palate, pupils, and papillæ due to hereditary syphilis. She had a marked mitro-aortitis and presented symptoms of hypothyroidism, hypo-adenia, and of vagotonia and arrhythmic breathing. The abdomen was moderately distended, tense, and rather sensitive in the right half, showing a thickened and dilated cæcum. We felt justified in

diagnosing hereditary syphilis in this girl's case on the basis of the hereditary antecedents on the mother's and on the father's and on the

bismuth is seen in the lowest part of the ileum, the ileum opens into the caecum at a slight Lane angle; the caecum and the ascending colon are seen to be flattened, wide, smooth, and atonic, without saccululation

dilated

Roentgen diagnosis colitis with pericolic of the ascending caecocolon

On the basis of the above diagnosis, mercurial treatment with Van Swieten's solution was given. At the end of 8 or 10 days, the bowels began to move without the administration of laxatives. As the mercurial treatment was intensified, the evacuation of the bowels became more and more regular.

At the end of a month there were one, two, or three per day suspension of the bowels. At the end of a month, the bowels moved by Van Swieten's solution or a month, it that the patient had normal bowel movements. In view of this result, it was decided to give the patient two more mercurial treatments, using Van Swieten's solution and Gibert's syrup, each treatment to be repeated after a month. We hoped thereby to

months of bismuth. The first part of the transverse colon was normal. In the second part of the transverse colon the bismuth masses were irregularly distributed and the physiological contour obliterated. The descending colon was normal.

patient's condition was normal.

The mother has not been examined but is considered healthy. She has had five normal pregnancies, four daughters and one son all sickly; no miscarriages. In early childhood the patient had

ordinary, and she continued to be healthy until she was 18. From then on, she grew weak and

became more and more constipated. Her appetite was poor, she had morning nausea, a nasopharyngeal catarrh which was apparent only at night; she had pains in the caeco-appendicular region, with alternating sensations of cold and heat. She slept soundly and awoke more tired than when going to sleep. Here and in Switzerland she was given numerous treatments for the nocturnal nasopharyngeal catarrh, but without avail. The patient menstruated at 12, and her courses were regular, painless, and moderately abundant, until she was 24, when they became painful, slightly irregular, scanty, and her headaches and vomiting.

showed a cutaneous catarrh of the thyroid gland, cyanotic catarrh of the bronchial, left side. The caecocolonic region was slightly dilated.

constipation we attribute to the pericolic of the left caecocolon. The roentgen examination made by

of the ileum and portions of the caecum

2. The first part of the transverse colon was normal. In the second part of the transverse colon the bismuth masses were irregularly distributed and the physiological contour obliterated. The descending colon was normal.

patient's condition was normal.

is of the ileo-colon whole and

calomel, Van Swieten's solution, Donovan's ferrari solution and elixir biniode (Contirran). Under this treatment the patient improved gradually and progressively. After a year's treatment with the patient under strict supervision, we find that there is a lessening of the aortitis, the menstruation has become normal, that the disturbances in the respiratory passages have vanished, that there is marked improvement in the hypothyreosis, the pains in the cæcocolonic region have disappeared, and the bowels move regularly.

CASE . . . "he father,
age 45, . . . together
with sli . . . 2, he had

four children born at term and two spontaneous abortions. A sister of the patient suffered from interstitial keratitis at the age of 6; it has left slight leucoma.

The patient in question presents no interesting data in her previous life. She menstruated at 12, the courses being regular, extremely painful, moderate in quantity, and lasting 3 and 4 days. Since early childhood she has grown slowly more and more constipated. In her earlier years mild laxatives

of the abdomen, at which time the abdomen became distended and tense. Such periods were frequently followed by a diarrhæic crisis and a new period of constipation.

On examining the girl in May, 1918, we found hereditary syphilitic stigmata of the pupils, optic discs, teeth, and bones, together with marked symptoms of hypothyreosis, hypo-epinephry, and aortitis. The abdomen was generally distended, painful over

e by Dr. H. H.

the bismuth

(Roentgenogram 8), the stomach was partly emptied and we saw but few peristaltic waves. The duodenal bulb was full. All the jejunum and first portion of the ileum were filled with bismuth.

3. Six hours after swallowing the bismuth—during which time the patient's bowels had moved—(Roentgenogram 9), the stomach was seen to be empty and the cæcum and ascending colon were quite filled with bismuth. A small quantity of bismuth remained in the lower part of the ileum. The outlines of the cæcocolon were seen to be uniform, with a considerable diminution of the sacculations. In the first portion of the descending colon, the retention of bismuth and signs of pericolicitis were noted.

4. Twenty-four hours after administration of bismuth (Roentgenogram 10), there was a very pronounced retention of bismuth at the level of the cæcum and there persisted a diminution of its sacculations. The cæcal end of the appendix contained bismuth. The ascending colon, the right colic flexure, and in the first portion of the transverse colon, stains of bismuth, distributed irregularly, persisted, with marked aereocoly at the level of the right colonic flexure.

to the abdominal disturbances, we saw in them an exponent of chronic constipation with intense pericolicitis of the right cæcocolon, and at the level of the transverse colon and the first portion of the descending colon.

The roentgen diagnosis was pericolicitis of the cæcum, ascending, transverse, and descending colons.

Mercurial treatment by means of Van Swieten's solution was begun. The treatment was well tolerated and 8 or 10 days after beginning it, bowel movements began, first scanty, later more free, as the treatment was intensified. After a period of a month, the mercurial treatment was discontinued for a month. A second course was then begun. During the interval between treatment, constipation returned, but was relieved on resuming the second course.

Following the last treatment, the girl had an attack of acute appendicitis. About a month after the attack, she was operated upon by Dr. J. F. Molinari. The appendix was bound by adhesions to the cæcum, the cæcal region being also entirely covered by adhesions. Surgical intervention was restricted to the appendectomy. Convalescence was uneventful.

In spite of the appendectomy the bowel symptoms remained the same. Constipation continued, the diarrhæic attacks were less frequent and painful. Under the circumstances, 2 months after operation, monthly mercurial treatment by means of Gibert's syrup were begun, with pauses of 14 or 20 days between the courses.

The efficacy of the treatment was more evident in the second period, as in the pre-operative one, but the effect was no longer transient but much more lasting.

After operation the girl had four courses of mercurial treatment, and now, 2 months after the last course, enterocolitis and constipation have greatly

We believe that the favorable outcome in this case is due to the combined surgical and medical treatment. It is interesting to note that the attack of acute appendicitis occurred

after the patient had two one-month courses of mercurial treatment

CASE 5 F M, age 28, married at 20, has had three pregnancies with healthy offspring and no miscarriages. The husband is healthy. The father died at the age of 63 from an unknown cause. The mother is 57 and has diabetes. She had had 11 children of whom 5 died from unknown causes. Six children are living.

The patient menstruated at 12, the periods were regular, scanty, variable as to duration, and painless. She has felt ill since she was 18 or 19 years old. The symptoms at first were heaviness in the upper abdomen, and constipation. These symptoms have slowly become intensified and have been accompanied by burning in the stomach, and frequent,

great general gastric distress and malaise.

Physical examination made on July 16, 1918, furnished the following: very thin hair, unequal

were bowed. Sergeant's line was unmistakable, the skin was of the myxedematous type with diffuse pigment, particularly around the nipples and the mid abdominal line.

menstruation were ascribed to peri-enteric origin from pericolicitis of the right cæcum, colon, right flexure, and hepatopyloroduodenal perienteritis of the duodenum with vagotonia, resulting in chronic constipation.

pain. In the duodenum some antiperistaltic waves were observed. The radioscopical examination of

results: less eructation, daily spontaneous evacuation of the bowels, marked relief from the headaches, subjective improvement in the general and abdominal conditions. At this time, September 14, treat-

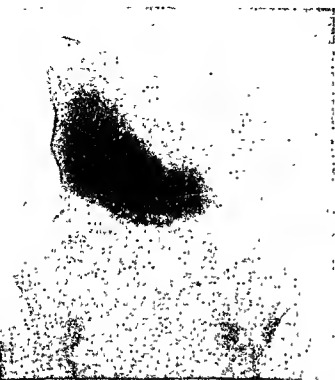
ment with a mixture of alkaline laxatives to be taken for 2 weeks, after which specific treatment with mercury and arsenic in suppositories, was resumed. This treatment with mercury and arsenic was continued for 2 months, after which we again saw the patient (December 7, 1918). She reported that her general condition was evidently improved:

intestinal phenomena were overcome.

CASE 6 M A, age 38, French, single entered our ward in the Durant Hospital, April 20, 1918. Her personal and hereditary antecedents were of no importance. When the patient was 7 she had diph-

13, her periods being very painful at first. At present the periods are very irregular. She suffers from rheumatism and has had several attacks of bilious vomiting. For the past 10 years she has suffered from enterocolitis and painful defæcation. At times she has noticed that her abdomen swells and becomes painful and there is a feeling of obstruction in the lower right abdominal region, and that after a time these conditions subside. She has chronic, obstinate constipation.

obliterated. The enema passed the ileocaecal junction and the ileum opens at an abnormal angle into the cæcum (Roentgenograms 12 and 13).



Roentgenogram 1. Case 2, showing the stomach, shortly after the bismuth meal, slightly hypertonic, normal in shape, position, and size.

On the roentgenological findings a diagnosis was made of typhlocolitis with partial colitis of the descending colon. Specific treatment consisting of the endovenous administration of enesol followed by gray oil was prescribed. The effect upon the patient both as to her general condition and specific ailment was quite remarkable, the headaches vanished, the languor, palpitations, and gastrointestinal disturbances gradually grew less until the pains and painful seizures in the right lower region disappeared completely, and evacuation of the bowel became regular.

During the year that we have had this patient under observation, the very favorable change effected by the first course of mercurial injections gradually improved.

This first group of clinical observations is composed of a series of individuals, youths and young adults, suffering from chronic constipation and membranous peri-enteritis. In the majority, constipation appeared in childhood or at the age of puberty and in all cases became progressively intensified so that it was necessary to give purgatives, but even these proved inefficacious. The constipation was accompanied by the syndrome of membranous peri-enteritis. Obstinate constipation was interrupted at times by attacks of



Roentgenogram 2. Same case, taken 6 hours after bismuth meal showing opening of ileum into the caecum with slight Lane's kink. Caecum and colon full, smooth, atonic

diarrhoea associated with abdominal pains and a feeling of obstruction, generally in the lower right quadrant.

Physical examination revealed an area of tenderness of varying intensity. In all the patients the digestive function was affected.

The diagnosis arrived at was perienteritis, and this diagnosis was founded on the history, the physical and X-ray examinations. In this group the regions most constantly affected were the caecal and ascending colonic regions. This form of cecocolonic perienteritis as recorded in the six patients was associated, in every case except Case 1, with other foci of membranous perienteritis, as follows:

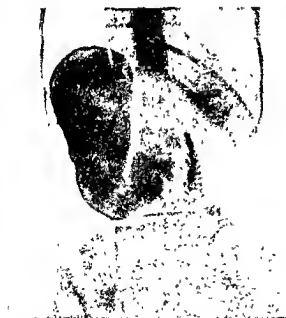
Case 2, ileocaecocolonic perienteritis with symptoms of Lane's kink; Case 3, perienteritis of the splenicocolic angle, affecting the left half of the transverse colon and the first portion of the descending colon; Case 4, perienteritis of the descending colon; Case 5, perivisceritis of the upper right quadrant, affecting the gastrohepatic duodenal region;



Roentgenogram 3 Case 2, taken 24 hours after bismuth meal, showing the cecum and ascending colon distended with retained bismuth

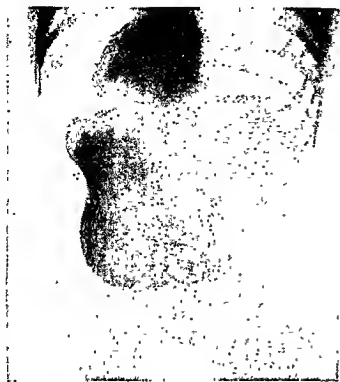


Roent meal atonic, tribute cused normally The second portion has a blurred outline and bismuth shadows irregularly distributed



Roentgenogram 4 Case 3, taken immediately after bismuth meal, showing the stomach slightly ptotic and hypotonic The pyloric cavity, duodenum and first portion of the jejunum are filled with bismuth





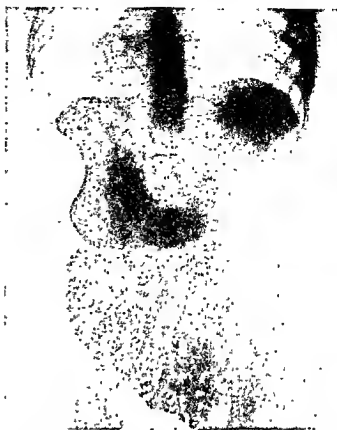
Roentgenogram 7 Case 4, immediately after bismuth meal. The stomach is large and smooth, slightly ptotic and hypotonic.

Case 6, existent perienteritis of the descending colon, together with an intense chronic catarrh of the rectosigmoid.

The roentgen examination furnished in all the patients findings of fundamental value in regard to the form and function of the large intestine, and by this means alone perienteritis may be diagnosed.

These patients without exception had had medical treatment for a long time; usually for years, without effect. Different forms of treatment had been prescribed, always symptomatic and without fundamental effect, because late hereditary syphilis was not suspected.

The patients presented a variety of organic alterations. Dysendocriniasis was present in every case, with hypothyroidism predominating, and frequently associated with hypo adrenalism or dysovarism. Aortitis alone or associated with mitro-aortitis was a frequent finding in our series and by the way (for we shall come back to the subject), at no time did we attribute this condition to chronic constipation, but we did consider it one of the diverse manifestations of hereditary syphilis



Roentgenogram 8 Case 4, one-half hour after swallowing the bismuth. The stomach is partly empty and shows a few peristaltic waves. The duodenal bulb is full. There is bismuth in the jejunum and first portion of the ileum.

the symptoms of which were presented by all the patients in a more or less typical form.

Gastric and intestinal vagatonias were a frequent condition, and we consider the nervous disturbances as secondary to hypothyroidism or hypo-adrenalism.

In all the patients in the first group, the presence of hereditary syphilis was evident. They presented characteristic dystrophic stigmata associated with active tertiary infection. Their improvement under specific treatment has convinced us that we were quite right in our assumption. The family history was of the greatest value in confirming our diagnosis.

In all these patients, the specific treatment in general and the mercurial treatment in particular yielded very favorable results. For the most part we used Van Swieten's solution in progressive doses, by mouth. In no way can the efficacy of the specific treatment be attributed to the "irritant" effect of the mercurial salts taken by mouth, for its

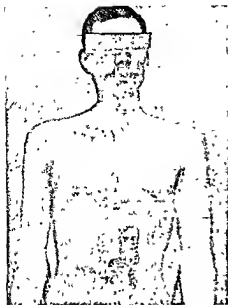


Fig. 1. Face, upper and lower limbs with acromegalic tendency, absence of color. Thoracopelvic conformation of eunuchoid type.

slack adhesions of the omentum to first scar. Neostoma, transverse mesocolon, and a meter of the jejunum were attached by new, lax, avascular adhesions. A typical Lane's kink (Fig. 3) is present, and as well insufficiency of the ileocecal valve. There are membranes on the cæcum and a fatty pericolic infiltration in the ascending colon. After mobilizing the cæcum, typhlosigmoidostomy was done.

For the first fortnight after the operation, the patient suffered from diarrhoea, after which the bowels became normal. Later, another operation was necessary on account of evisceration of the wound. The patient made a good recovery.

Four years later he came back to the ward, complaining again of asthenic symptoms, slight headaches and loss of weight. He suffered from mild constipation and gastro-intestinal disturbances as before, although not so marked. We examined the patient along other lines and from the family history and the physical findings were lead to seek another explanation of the cause of his illness. We found that the father died of aneurism. The patient was abnormal in development. He had a long, drawn-out thorax, wasp waist, and wide hips. He was of the eunuchoid type with upper and lower limbs out of proportion (Fig. 1), collar bones protruding, tibiae rough, palate arched, face large, and the hands and feet were out of proportion. In other words, he was

acrocyanosis, unequal pupils, slight pigmentation of the skin, and enlarged testes.

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grams, the digestive functions became quite normal, and the constipation and asthenia vanished. He is able to return to work and asked to be discharged so that he can return to his local physician for treatment.

CASE 2. P. C., Argentinian, age 30. Pinerio Hospital, History No. LXVIII, September 13, 1918. The family history was very vaguely given. The patient has always been healthy, except for constipation. He has had a good appetite. Two years ago, in 1916, he was operated upon in San Roque.

He complained of slight distress throughout the abdomen, with pyrosis, rather difficult digestion, and gaseous distention. A course of gray-oil treatment (6 to 10 grams) and iodide was given and after the fourth injection all the distress vanished.

mented at the right flexure of the colon and spread downward to the cæcum. This pain had been present for the last 2 or 3 months. It had no relation to the meals. The patient is free from distress in so far as the stomach is concerned. The operation scar is normal in appearance. As for objective signs the only one to be found is painfulness on palpation over the cæcum, ascending colon, and left portion of the ileum.

Radioscopic examination by Dr. Donovan showed pericolicitis, Jackson's membrane extending to back of the ascending and transverse colon,

disturbances. Up to November 24, 1916, the patient had been given a course of gray oil (10 injections of 0.10 centigram each); and had gained in weight from 67 kilograms, 800 grams to 74 kilograms. The abdomen was normal, bowels regular and the patient had no pains.

work. Stigmata and lesions attributable to hereditary infection were arched palate, long, rough arched bones; exostosis without history of trauma in the right tibia; chocolate-colored anectodermic spots on chest and back, unequal pupils, exaggerated reflexes.

The first gastro-enterostomy improved the gastric distress for a few months, it was finally cured by

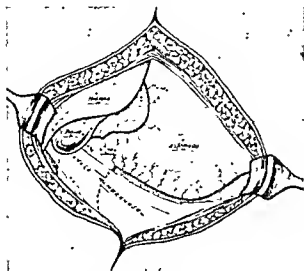


Fig 2 Schematic drawing showing velomembranous periduodenitis (Morris type)

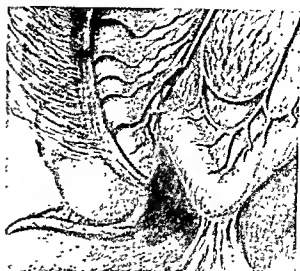


Fig 3 Drawing showing ileocecolonic portion (Lane's kink) and external appendix (Jackson's membrane)

treatment with mercury and iodine. Two years later, symptoms appeared in the lower abdomen. There was revealed by a second operation adhesive epiploitis and retractile mesenteritis which did not fundamentally alter the intestinal physiology. But treatment with mercury and iodine repeated in several series accentuated the initial improvement not only in so far as the local symptoms were concerned, but also as to the nutrition and general health.

CASE 3. L. V., age 20, Portuguese, single. Pinero Hospital, History No. XVII. The father was operated upon for ulcer of the stomach. Of 5 brothers and sisters, 2 died in infancy. The mother

last 8 months, he has suffered from alternate diar-

elimination of a great deal of gas. He further complains of general debility and weakness. The distress appears 3 hours after meals. On palpation a painful cæcum, pasty and mobile with painful gurglings on change of position, is noted. The cicatrix from operation is normal. The transverse, descending, and sigmoid colon painful and spastic to touch.

Radiological examination by Dr. Donovan shows membranes to the back of the ascending colon with ptosis and spasticity in middle portion, iliac loop and with loop painful on pressure. Stigmata and lesions attributable to hereditary infection; collar bones and ulnæ arched and rough; arched palate; irregular teeth with erosions on sides and edges; receding forehead; second aortic tone vibrant; spleen enlarged. Unequal pupils and exaggerated reflexes were present.

When treatment with gray oil, 0.10 centigram each injection, was begun the patient weighed 54 kilograms. On October 14, 1918, after a series of 10 injections he weighed 58 kilograms; he had improved in appearance generally, had a rosy color, and weakness had vanished. Intestinal disturbances were quite regulated. Radioscopic examination showed normal peristalsis. Twenty-four hours after administration of bismuth, there were no residue in the rectum (Dr. Donovan).

Notwithstanding the improvement, an exploratory operation was proposed to the patient, and he agreed. No membranes on the ascending colon were found, although the radiologist had diagnosed them. There were only light adhesions to the great omentum, which pulled the ascending colon and the operative cicatrix but little. The adhesions were easily detached. In the ileopelvic colon mesenteritis was found on the lower surface which would explain the pain detected by the radiologist. On the whole, nothing was found which should disturb the intestinal function. The rectum and abdomen were normal. After operation slight intestinal disorders recurred but yielded to a new series of gray oil and iodine.

CASE 4. B. S., age 30, Argentinian. Pinero Hospital, January 7, 1919. History No. CXLIV. The father died at the age of 50. He suffered from mental disorders which were not defined. He had a sister who was subject to epileptic attacks. The patient enjoyed good health until 20, although constipated. At the age of 20, that is 10 years ago, the patient began to suffer from pyrosis, abdominal distention, difficult digestion, with frequent headaches and sometimes vomiting. He was very constipated, the bowels not moving for 3 or 4 days. Two fingers below the xiphoid in the median line, there is a spot of extreme tenderness. The patient described the pain at this point as of spontaneous erosive nature, unrelated to meals. He has had periods of partial com-

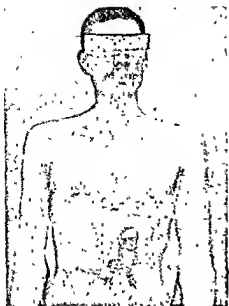


Fig. 1. Face, upper and lower limbs with acromegalic tendency, absence of color. Thoracopelvic conformation of eunuchoid type.

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he complained of slight distress throughout the abdomen, with pyrosis, rather difficult digestion, and gaseous distention. A course of gray-oil treatment (5 to 10 grams) and iodide was given and after the fourth injection all the distress vanished. Ten injections were given, at the end of the course the patient had gained 10 kilograms in weight. Two years later the patient returned to the Pinero Hospital complaining of a severe pain which commenced at the right flexure of the colon and spread downward to the cæcum. This pain had been present for the last 2 or 3 months. It had no relation to the meals. The patient is free from distress in so far as the stomach is concerned. The operation scar is normal in appearance. As for objective signs the only one to be found is painfulness on palpation over the cæcum, ascending colon, and left portion of the ileum.

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The first gastro-enterostomy improved the gastric distress for a few months, it was finally cured by

CASE 6. X. X., age 17, Argentinian, military cadet. The father acquired syphilis with premature arteriosclerosis and attacks of angina at 45. The patient has several brothers and sisters, all with pronounced dental defects. The personal history is good. He denies venereal infection and shows no signs of it. He is not constipated. A month before being examined the patient had an intermittent,

spots were exquisitely painful and tender. Except

sions similar to those in Case No. 5 which we consider a valuable sign of hereditary syphilis. The patient recovered well from the operation. No other treatment was given

This group of patients whose progress was studied under the rigid control of laparotomy, range between the ages of 20 and 30 years. The younger ones gave histories of 1, 2, and 3 years' duration; the older ones of rather longer periods (6 to 8 or 10 years, Case 4), showing that the disorders appear usually in young persons before attaining full growth. This is similar to what was shown in the first group. In all of them, too, constipation occurred as a premonitory symptom of approaching gastro-intestinal disorders. The latter manifest themselves by statical mechanical alterations and changes in secretion, in some cases affecting the intestinal tract in many ways (Cases 1 and 2), from the stomach to the iliac colon; in others, it is found to be limited to the stomach and the liver as in Case 4; in still others, to a lower tract, such as the cæcum, the descending colon, and appendix.

Acute or chronic lesions of the appendix which at first were independent of other disorders are shown in Cases, 3, 5, and 6. The existence of appendicitis strengthens the presumption of a pathogenesis connected with congenital malformations of the organ. Case 2 showed the concurrence of duodenal ulcer, a phenomenon explained by Lane as a result of the enterocolonic lesion.

The predominant abdominal symptoms are not very different, save that they vary slightly

from the classical "chronic abdomen," velomembranous perienteritis, and other conditions similarly named; on the other hand, the symptoms are almost identical with those described in the previous group, i.e.: laborious digestion, pyrosis, tympanites, subjective and objective phenomena of spasticity combined or alternating with atonia or ptosis; tenderness as in Case 1, to real pain in the epigastrium as in Case 4, and in the right iliac fossa as in Case 3; permanent constipation of the atonic type in some, as in Case 4; or partial and intermittent, alternating with diarrhoea in others, Case 3; of a spastic type, in others still.

The operation performed for therapeutical reasons in some, and for exploratory reasons in others, has shown interesting pathological data. Thus in Case 1 for instance, we discovered the extent of the peritoneal process, which began at the duodenum (Morris) and ended at the iliac colon with its ileal bend (Lane's kink), its ascending pericolic membrane (Jackson's), and all lesions in an advanced stage, and which clearly obstructed regular peristalsis. However, in Cases 2, 3, and 4, exploration of the abdomen revealed only small membranes, ordinary adhesions, slight retraction of the mesentery, of little mechanical significance. These could in no way be responsible for the functional disturbances noted. These findings show that identical or similar clinical symptoms may be found in these sufferers, with fundamental differences, in their pathology—an important fact to remember.

Generally speaking, in all and particularly in the sufferers from loss of weight and strength, lax mesentery and consequently ptotic and mobile organs were found (Cases 1, 2, 3, and 4). At the same time, the walls were thin and transparent and there was plainly visible in the submucous membrane, a venous network, the veins being enlarged and distended. This condition gave the organ the color of red wine.

In Cases 5 and 6, we find peri-appendicular and pericæcal lesions of a peculiar nature undescribed hitherto by any observer, to which we attribute an etiological significance, so evident that we do not hesitate in assigning

which bend and obstruct mechanically the digestive tract. It will likewise comprise those who show signs of chronic inflammatory processes, concurrent or subsequent to the abdominal affection, as appendicitis, cholecystitis, duodenogastric ulcer, adnexitis, etc. This type will clearly benefit by the different surgical measures. In order not to exceed the limits of this article, we shall only say that these measures consist in serving the membranes with the corresponding peritoneal repair, the details of which will be discussed in a future paper. In concurrent inflammatory lesions, further surgery as indicated by the condition will be performed. The prognosis will be good but certain reservations must always be made.

Functional group. This group consists of those in whom it has not been possible to diagnose peri-entral lesions in a stage and of a nature resembling those in the first group. This second group must be considered from a different viewpoint, for some patients manifest only variable symptoms. These may well be called "entero-atavic," meaning thereby that the static changes together with changes in the digestive secretions vary as if they had lost their regulating forces through some lesion of the sympathetic or sympathicocapsular nerve (chronic sympathicopathy). These patients should not be operated upon and will be more benefited than the first group by medical treatment; consequently, their prognosis will be much better than that of the first group. Between the two may be found every intermediate stage, and by a little practice each stage can be properly classified. On the other hand, this conventional classification does not exclude in any sense, the sufferers of the first group from a concurrent sympathetic functional lesion or a sympathicocapsular one. On the contrary, we are of the opinion that such a possibility is never lacking in this affection.

In conclusion we may add that no surgical treatment should be given until the result of the medical treatment is known. The medical treatment prescribed in this group of patients was always on a mercury basis and consisted in injections of gray oil in doses of 0.08 to 0.10 centigram each, given in a series

of 10, and repeated after a 30-day interval. We systematically combined iodine in the form of iodide and tincture in large doses, according to how it was tolerated.

In all we had a favorable response after the second, third, and fourth injections; digestion began to improve, the patient took nourishment and consequently there was an increase in weight, recovery of strength, and better color of the skin and the mucous membranes.

In Case 3, we used exclusively intravenous novoaerzenobenzol in progressive doses and obtained surprising results. After the third injection, the gastric pains and obstinate constipation which had been present for 10 years vanished. At the present time after a second series, the patient remains cured.

With regard to the etiology of the perenteritis in our patients, we had no preconceived ideas (for 50 per cent of them were subjected fruitlessly to modern surgical treatment), and it has been shown by the success of the treatment that hereditary syphilis was present in nearly all of our cases in various forms and late in its manifestations.

As to pathogenesis, we believe that it is not a question of a single mechanism, but at the least complex and varying as the persons in question have gross anatomical lesions or have no important lesions. In the latter, we believe that we are dealing with real chronic sympathicopathies mainly or exclusively of endocrine origin.

In those subjects with anatomical lesions, we must take into consideration congenital malformations, true failures in development caused by hereditary syphilis through the endocrine glands which play a primordial part in the foetal development, first, and in the extra-uterine life, later on, presiding over, directing, and regulating foetal development and growth in the very important and complex morpho-regulating function.

The faulty conformation of the abdomen on the one hand and the lack of endocrine balance on the other (chiefly thyroid and capsular, and occasionally hypophyseal) engender disturbances in the digestive statics and dynamics which end in a chronic inflammatory condition of the colon. Constipation intensifies the colitis which it has brought on, and the latter

extends the inflammatory process and intensifies the congenital lesions, thus constituting a vicious circle not easily broken.

The foregoing considerations substantiate the following conclusions

CONCLUSIONS

1. Hereditary syphilis is a very frequent cause—perhaps the most frequent—of membranous perienteritis and analogous conditions

2 Its pathogenesis is complex as several factors operate, which set down in chronological order are defects of conformation in the intestinal walls because of the faulty endocrine function which presides over and governs their development These malformations on the one hand, and the abnormal function of the nervous system (sympathetic and autonomous), owing to the endocrine deficiencies, produce defects in the gastro-intestinal statics and dynamics As a consequence of the latter we have intestinal stasis which brings on chronic inflammation of the colon From the

in direction, generally in the form of a late manifestation

3. These cases, first of all, should be given mixed antisiphilitic treatment with mercury chiefly.

4 The surgical treatment is not to be abandoned, but is to be restricted to cases in which definite indications confirmed by clinical and radiological diagnoses point to mechanical alterations of importance (kinks, adhesions, etc.); or to co-existing inflammatory lesions of adjacent organs. ovaries, tubes, appendix, gall-bladder, duodenum and stomach. Surgical treatment should consist in separating membranes and in molding and mobilizing the peritoneum, together with careful peritonization and removal of the adjacent affected organs

5 There is the group in which the patient suffers from the chronic abdomen and yet there is no anatomical lesion of importance. These should be considered as types of "sympathicopathy," owing to the particular deficiencies, more or less marked, of the endocrine glands as suprarenal capsules and thyroids, principally. It is important to know this type of chronic abdomen, for it involves a prognosis and a therapeutic management very different from the membranous perienteritic type.

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those of late diagnosis where rational treatment is impotent in modifying chronic lesions already well developed. In these a more or less pronounced improvement is to be obtained by carrying out suitable surgical treatment.

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OBSERVATIONS ON THE TECHNIQUE AND INDICATIONS OF RADIUM-THERAPY IN UTERINE CARCINOMA¹

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IN reviewing the literature on the treatment of uterine carcinoma with the γ -rays of radium, we are at once confronted with the fact that a uniform plan of the application of the rays does not exist. It appears that every radiologist has a technique of his own. The greater number of clinicians use radium salts, a lesser number use emanations. A difference in the therapeutic action and results obtained by either preparation does not exist as milligrams of element correspond in radioactivity to the same number of millicuries of emanation. Some clinicians advocate the application of large amounts of radioactive substances; others deem a small amount sufficient; some prefer the use of large or small amounts within short or long time intervals; others advocate one continuous exposure. Again, if intermittent applications are made, some advise a short exposure, usually 10 to 12 hours, others would extend it to 24 hours, and so forth.

We have given the various methods an extensive trial in our clinic during the last 6 years. Careful records have been kept of all the cases and have enabled us to evolve a method which we deem safe and efficient. Another question seems as yet to be unsettled; namely, whether the pelvic organs should be removed surgically after a local healing of the cancer growth by the rays, or whether such a procedure would be superfluous.

The technique of radiumtherapy must be based on the diseased conditions found in the pelvis in uterine carcinoma. The purpose of the treatment is to destroy the cancer completely without producing serious injury to the surrounding healthy tissues and organs which would render illusory the first object.

The vaginal portion of the cervix lies in the interspersal line, the cervix and lower part of the uterus and parametria lie somewhat higher. A plane through the anteroposterior diameter of the mid-pelvis well defines the limit of the disease upward. Cervical carcinoma spreads by invasion of the vaginal vault, by infiltration of the lymph vessels of the parametria, by extension into the paravaginal tissues and along the sacro-uterine ligaments to the pararectal tissues and rectum, and through the vesicovaginal septum to the bladder. The part of the pelvis between the pelvic outlet and the mid-pelvic

plane contains all these structures and is the space which must be rayed. The transverse and anteroposterior diameters of the mid-pelvic plane are 12 centimeters long, the transverse diameter of the pelvic outlet is 12 centimeters, and the anteroposterior diameter is 11.5 centimeters long. The cervical canal lies in the pelvic axis. Hence a radium capsule placed within the cervical canal will disperse the rays evenly through the pelvic cavity. The rays must penetrate 6 centimeters of tissue all around with such an intensity at the periphery that carcinoma cells at this distance become destroyed.

We also must endeavor not to injure permanently the vital organs and structures located in this area—they are the rectum, the bladder and the ureters. The posterior wall of the bladder, the anterior wall of the rectum and the ureters are 1.5 centimeters distant from the cervical canal if the organs are empty. Should the bladder and the rectum be filled they are forced closer to the cervix and the distance is reduced to about one-half. Therefore, it is necessary that the bladder and the rectum be empty and left empty during the treatment. This will be understood when discussing dosage. We insist on the insertion of a retention catheter in the bladder and the flushing of the bowels with castor oil and enemata immediately before beginning the treatment.

The amount of radium to be used depends on the extent or impulse of the radioactivity of the radium preparation and the extent of the area to be rayed. We must use the smallest amount permissible. Overdosing leads to dangerous complications, as necrosis and destruction, infection, painful cicatricial tissue formation causing stricture of the rectum, vagina, and ureters. The systemic reaction, also, places a limit on the amount of radium it is advisable to use. Rapid disintegration of diseased and normal cells leads to absorption and at times severe toxæmia that may prove fatal.

The object of the application of radium is to apply the element for a sufficiently long time to destroy the deeply located pathological processes within the pelvis without permanent injury to the healthy tissues and organs. This dosage can be determined only by the biologic measurements of each radium preparation. Dosage is a complex quantity and comprises the quantity of radium in

¹ Read before the Chicago Gynecological Society, March 19, 1920. (For discussion, see p. 201.)

milligrams of element, the length, width, and depth of the container, the purity of the salt, the filtration such as rubber and metal filters, the distance of the radium from the area treated, the time duration of the exposure, and the time intervals between exposures. The tubes used in our clinic contain each 25 milligrams of the element in the form of the insoluble sulphate of a

meters. The metal filter, therefore, is 12 millimeters and effectually absorbs the beta radiation. The Sagnac rays formed in the metal filter are absorbed by a pure, black rubber tubing of a wall thickness of 3 millimeters in which the radium carrier is inserted. If such a container is placed over healthy skin at a distance of 1 centimeter between the axis of the radium capsule and the skin surface, then a reddening of the skin is observed within 10 to 14 days after an exposure of somewhat less than 2 hours. This dosage is termed an erythema skin dose and amounts to about two times 50 milligrams, i. e., 100 milligram element hours (mg. e. hrs.). If the exposure is increased to two and one-half to three hours a blistering appears after 10 to 14 days. A burn of the second degree has been caused. Should the exposure be extended to 20 hours a burn of the third degree results—the epithelium has been totally destroyed. The erythema and the second degree burn heal very rapidly without leaving a permanent defect. Should the radium carrier be applied at a distance of 2 centimeters then a erythema dose is obtained within 8 hours, and a blister dose within 12 hours because the intensity of the rays decreases inversely with the distance.

The sensibility of carcinoma tissue to rays is held to be about one-half greater than that of normal tissue. This does not agree with the findings of Kroenig and Friedrich. They found that an erythema skin dose is obtained by an application of rays measuring 170 electrostatic units (e) determined with a Wolf electrometer. They consider this the lethal skin dose. The dose that causes, after a certain time interval—usually 14 to 20 days—a visible and palpable decrease of the carcinoma growth is termed a carcinoma dose and is 150 e. The cancer sensibility quotient is obtained by dividing the skin dose with the cancer dose, i. e., $170 \div 150 = 1.15$. By biological tests we found that the erythema

TABLE I—CLASSIFICATION OF UTERINE CARCINOMATA

GROUP I	Carcinomata which are clearly operable after a physical examination
a.	Cases treated with pre-operative radiation and panhysterectomy.
b.	Cases treated with panhysterectomy and postoperative radiation
c.	Cases treated only with radiation
GROUP II	Carcinomata which are doubtfully operable * Borderline cases

TABLE II—TOTAL NUMBER OF CASES IN EACH GROUP AND GROSS RESULTS

Group	Living	Dead	No Report or Refractory	Total
Ia	3			3
Ib	0	2		2
Ic	1	—		1
Total	4	2		6
IIa	5	5	3	13
IIf	7	4	—	11
Total	12	9	3	24
IIIa	3	10	4	17
IIIb	4	0	12	16
IIIc	18	11	12	41
Total	25	21	28	74
IVa	1	1	4	6
IVb	6	16	11	33
Total	7	17	15	39
V	0	16	25	41
Summary				
Group I	23	8		31
Group II	22	7	3	32
Group III	24	30	28	82
Group IV	7	17	15	39
Group V	0	16	25	41
Grand Total	65	72	71	208

skin dose is about 100 mg. e. hrs. Hence the cancer dose must be $170 : 150 = 100 : X$ and $X = \frac{150 \times 100}{170} = 88 \frac{4}{17}$ mg. e. hrs., or in round

numbers 90. It has been impossible to install an electrometer to verify the measurements of Kroenig and Friedrich. I do not see any objections to them, as the experiments have been very scientific, thorough, and accurate. Applying the law of the inverse ratio to these results, we find that the lethal erythema skin doses are 100, 400, 900, 1600, 2500 and 3600 mg. e. hrs. for distances

TABLE III.—TIME ELAPSED SINCE TREATMENT IN CASES KNOWN LIVING OR DEAD OF GROUP I

SUBGROUP A					SUBGROUP B					SUBGROUP C				
Living		Dead		No Report or Refractory	Living		Dead		No Report or Refractory	Living		Dead		No Report or Refractory
Yrs	Mths	Yrs.	Mths		Yrs	Mths	Yrs	Mths		Yrs	Mths	Yrs	Mths	
5	6				5			3		2	7			
4	11				5			4						
2	10				4									
					2	7								
					2	7								
					2									
					2									
					1	7								
					1	5								
					1	1								

TABLE IV.—TIME ELAPSED SINCE TREATMENT IN CASES KNOWN LIVING OR DEAD OF GROUP III

SUBGROUP A					SUBGROUP B					SUBGROUP C					
Living		Dead		No Report or Refractory	Living		Dead		No Report or Refractory	Living		Dead		No Report or Refractory	
Yrs.	Mths.	Yrs.	Mths		Yrs	Mths	Yrs	Mths		Yrs	Mths	Yrs	Mths		
	11		3	4	1	2	1	2	12	2	8		8	12	
	9		2		3	3	1	8		1	8	1	10		
			5		4			2		1	4		8		
			5		2	6	1	6		1	4		2		
			5					3		1	4		8		
			7				2	1		1	2	1	4		
			1				1	9		1			9		
		1	1					6		1		1	3		
			9					10			11	1	3		
			7								10		10		
											9		2		
											9				
											8				
											6				
											6				
											4				
											4				
Total	2		10	4	4		9		12	18		11		12	82

of 1, 2, 3, 4, 5 and 6 centimeters respectively; while the corresponding cancer doses are 90, 360, 810, 1440, 2250 and 3240 mg. e. hrs.

If the radium carrier is placed in the cervical canal after a proper dilatation then the posterior wall of the bladder and the anterior wall of the rectum are forced 2 centimeters distant from the radium source. A ten hour application, or 500 mg. e. hrs., would not injure the bladder or the

rectal walls to the extent of a second degree burn, as it takes 4 times 150 or 600 mg. e. hrs. to do so. However, it would visibly and palpably damage the cancer tissue within a radius of 2 centimeters, as the cancer dose would be 4 times 90 or about 360 mg. e. hrs. We may assume that the healthy cells of the bladder and the rectum will rapidly recover so they will bear another application without permanent harm

TABLE V—TIME ELAPSED SINCE TREATMENT IN CASES KNOWN LIVING OR DEAD OF GROUP IV AND OF GROUP V

SUBGROUP A					SUBGROUP B					SUBGROUP C				
Living		Dead		No Report or Refractory	Living		Dead		No Report or Refractory	Living		Dead		No Report or Refractory
Yrs	Mths	Yrs	Mths		Yrs	Mths	Yrs	Mths		Yrs	Mths	Yrs	Mths	
1	0		1	1	10	4 days			11	1	0		8	25
					7	4				2	10		2	
					5					2	4		1	
					1	5					0		6	
					1	5				10		11		
												1	7	
					2	7				10			6	
						2				7			1	
						2				1	2		1	
						2				1			8	
													6	
						4 days							3	
						5						1		
						8 days							5	
						8 days						12 days		
						11							2	
						6 days								
						6 days								

after an interval of 12 to 14 hours, and so on until seven treatments of 500 mg e. hrs. each have been applied on 7 consecutive days, i. e., a total amount of 3500 mg e. hrs., the amount necessary to degenerate all carcinoma cells as far as the bony pelvic wall. As a matter of fact cystoscopic examinations made at 10 day intervals and extended over a period of 6 weeks have verified the correctness of the assumption. We have never observed a marked change in the bladder mucosa except an intense reddening. We have obtained postmortem examinations in 2 patients, who succumbed after a recession of the cancer tumor by radium-rays. As soon as we have completed the microscopic examinations of all the pelvic tissues, I will be able to know whether the amount of radium element in milligram hours actually did degenerate carcinoma cells adjacent to the bony pelvis.

The patient is subjected to careful re-examinations 10, 30, and then every 45 days for 2 years and every 3 months for an additional 3 years. Exact records are made each time. They note the visible findings of cervix, vagina, bladder, and rectum, and the palpable conditions of the uterus, parametria, and regional lymph glands

obtained by vaginal and rectal palpation. The radium treatment is not repeated unless a recurrence has taken place.

The after-treatment also must comprise adequate drainage of the uterine cavity. Pyometra has been frequently observed. In such cases, a soft rubber T drain is inserted into the uterine cavity after each removal of the radium carrier and continued for several weeks after termination of the treatment, until the secretion is reduced to a clear and negligible amount.

Three to four weeks after treatment a careful examination reveals a visible and palpable decrease of the cancer area. The cervix shows local healing. The uterus is palpable and movable, the parametria are softer in consistency, reduced in size and again movable and very often rendered free of any induration.

Such favorable results can be obtained only by a careful selection of cases. The cases are divided into five groups: (1) cases which are clearly operable after a physical examination; (2) cases which are doubtfully operable, "the borderline cases"; (3) cases in which an operation is absolutely impossible; (4) cases so far advanced that all treatment is hopeless; and (5)

RESULTS IN 18 CASES OF MALIGNANT TUMORS OF THE ANTRUM TREATED BY CAUTERY AND RADIUM

Number	Age	Sex	Duration of Lesion Before Operation	Pathologic Diagnosis	Length of Time Since Last Operation Months	Present Condition, Result
1	65024	62	m	6 months	Malignant	Dead
2	109108	38	f	Recurring, first operation in 1914	Epithelioma	No recurrence
3	207005	28	m	2 years	Lymphosarcoma	26 Data not obtainable
4	207386	56	m	6 months	Squamous-cell epithelioma	27 Hopeless recurrence
5	207662	62	m	19 months	Squamous-cell epithelioma	27 Data not obtainable
6	208383	58	f	16 months	Basal-cell epithelioma	27 Data not obtainable
7	210487	19	m	3 years	Fibromyxoma (malignant)	28 No recurrence
8	229122	38	m	1 year	Lymphosarcoma	22 No recurrence
9	231510	39	f	15 months	Squamous-cell epithelioma	12 Dead
10	235481	17	m	3 years	Fibrosarcoma	8 No recurrence
11	235003	47	m	3 years	Epithelioma	20 Recurrence
12	238077	47	m	3 months	Squamous-cell epithelioma	12 Dead
13	239333	63	f	24 months	Sarcoma	10 No recurrence
14	241630	39	m	5 months	Squamous-cell epithelioma	13 No recurrence
15	243402	37	m	6 months	Squamous-cell epithelioma	17 No recurrence
16	250256	15	m	5 months	Sarcoma	15 No recurrence
17	262797	35	m	16 months	Epithelioma (mixed tumor type)	8 No recurrence
18	272557	12	f	?	Sarcoma	9 No recurrence

the history also are important factors. Involvement of the nose, the floor of the orbit, and the sinuses renders the prognosis grave, but does not exclude the possibility of help from treatment. No patients with glandular involvement were selected for treatment.

The usual treatment of malignant disease of the antrum by resection of the jaw has not given a high percentage of cures because of the difficulty of entirely removing the tumor. This form of treatment also is associated with an operative mortality.

In the operation performed by the author the patient is anesthetized with ether by the drop method. After anesthesia has been induced the mask is removed and the head of the table is lowered to prevent the drainage of secretion from the pharynx into the trachea. A mouth gag is inserted in the side of the mouth opposite the growth and a water-cooled retractor inserted on the diseased side. The tongue is held out of the way by a curved retractor.

The growth is attacked at the point at which it appears in the mouth either through the palate or from above the alveolar process. If it has not bulged the cheek or palate, an opening is made above the alveolar process as in the Denker operation. The soldering iron at a dull heat is used as a cautery, a red iron carbonizes and prevents the penetration of heat. The soldering iron is carried up gradually into the antrum and the entire growth is cooked thoroughly from thirty to forty-five minutes.

Since there is practically no bleeding in this treatment, the walls of the antrum may be inspected to determine whether or not the growth has been thoroughly removed. As the patient begins to awaken from the anesthetic the irons are removed,

the mask is applied to the face, and the patient is again put to sleep with ether.

A knowledge of the pathology of the different types of malignancy is essential in determining the treatment. The rapidly growing sarcomata respond well to radium and do not require such thorough cauterization as the squamous-cell epitheliomata which are a most malignant type of tumor. The purpose of treatment is to eradicate the growth entirely at once by thorough cauterization followed by radium.

The author uses radium salts or the emanations in tubes which are introduced directly into the antrum at the point at which they seem most needed either at the time of operation or from ten days to two weeks later when some of the slough has cleared. He leaves 100 or 200 mg. from twelve to twenty-four hours within the antrum in addition to radium treatment outside the cheek with distance and screening. In all cases the dosage depends on the type of the malignancy, its duration, and its extent. The patient is kept under observation, returning every month or six weeks so that if a recurrence develops he may have immediate care. Such observation is very essential in order to control early recurrences. Any opening in the palate may be readily closed with prosthetic appliances.

Cautery and radium treatment of malignant tumors of the antrum have not been followed by any operative mortality or any postoperative complications of the chest. Two of the patients lost the eye on the side involved from the reaction to the cautery and radium, but in both cases the floor of the antrum was involved. The 10 patients who are well can not yet be considered cured, but they have been without recurrences for a period of months or years.

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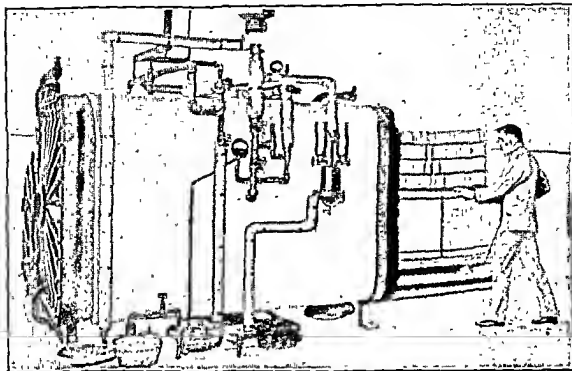
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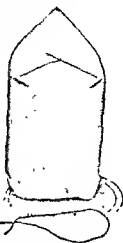
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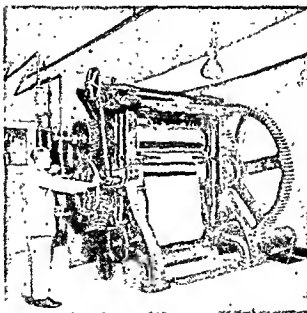
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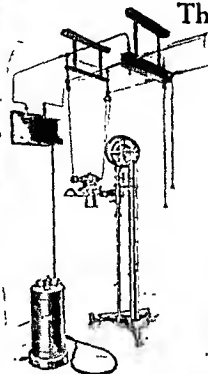
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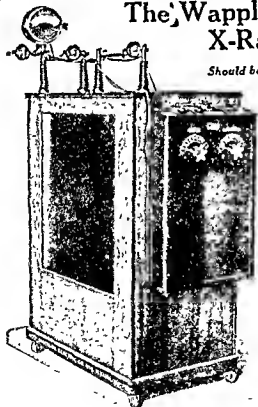
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cases in which there has been a recurrence after abdominal panhysterectomy. The technique described is indicated and can be successfully applied only in cases of groups 2 and 3. It is absolutely useless in cases of group 4, the terminal cases. It is impossible of execution in cases of group 5 on account of the absence of the uterus. Cases in group 1, of course, are subjected to abdominal panhysterectomies after a preliminary radiation.

Properly selected cases reveal a visible and palpable subsidence of the cancer growth after a correctly applied radium course. A panhysterectomy could be easily performed. The operation would not present unsurpassable technical difficulties. Could the dangers of an added operation hold out to the patient a more favorable prognosis? Out of a total of 208 uterine cancers treated from April 1, 1914, to April 1, 1920, with radium, 22 cases were assigned to group 2 and 82 cases to group 3. Thirteen of group 2 were subjected to an abdominal panhysterectomy after a recession of the diseased tissues to an apparently normal state after radium treatment. Of these, 5 are living and 5 have succumbed to the operation and 3 did not report. Nine of group 2 were treated with rays only—7 are alive and well, and 2 have died. Sixteen cases of group 3 were subjected to panhysterectomies after an apparently local healing. Two of these are living, while 10 have succumbed and 4 did not report. Twenty-five cases were subjected to an excochleation, cauterization, and radium treatment. Four cases are living, but 9 died and 12 did not report. Forty-one cases were treated with radium only. 18 of these are well and free of recurrence, while 11 died and 12 did not report. See Tables 1, 2, 3, 4 and 5. They also state the time elapsed since treatment of those living and known dead. Patients treated with radium only and not subjected to panhysterectomy, excochleation or cauterization have a better chance all around.

If local healing is obtained we should not subject the patient to an unnecessary operation. Preliminary excochleation and cauterization also do not offer the patient any additional benefits. They render her chances less favorable in spite of the added physical and material sacrifices.

Recurrences after a local healing of the carcinoma with radium appear within 6 to 9 months, rarely later, following the termination of the treatment. It is a noteworthy fact that such recurrences are very refractory to radiations, probably due to the heavy connective-tissue reparative process. Exceptionally an arrest and recession of the recurrence may take place. If the growth does not react to the treatment and if the recurrence is confined to the uterus, we then advise surgical eradication. Should the recurrence appear in the regional lymph nodes we have subjected the patients to laparotomy, buried canals into the tumor masses, in which we placed rubber tubing. The tubes are secured with silk stitches to the parietal peritoneum of the posterior abdominal wall and also to stab incisions in the anterior abdominal wall. The length of the tubes must be carefully determined. The radium applicators are secured to a heavy silver wire which easily adapts itself to the course of the tubing. Two to four applications of 50 milligrams radium element of 10 hours each and intervals of 12 to 36 hours between applications are given.

We have subjected 5 patients to the procedure without any apparent benefits. Two patients succumbed to peritonitis. Three had a tedious convalescence. Of the latter one succumbed 6 weeks later. She had a large metastasis in the liver. Another one expired 6 months later from a carcinomatosis. The third one reported not to be relieved and has not been heard from since. In spite of these discouraging results we will continue the treatment in specially selected cases of such recurrences.

EXPERIMENTAL LIGATION OF THE HEPATIC ARTERY

A PRELIMINARY NOTE

By MOSES BEHREND, M.D., PHILADELPHIA

THE death of the patient in the case reported below led me to make a study of the experimental ligation of the hepatic artery

Morris Blumfield, age 12, admitted to the Mt Sinai Hospital, May 6, 1919. The child had been

rigid throughout, but more marked rigidity was present in the upper abdomen. A diagnosis of internal hæmorrhage was made. On opening the abdomen in the epigastric region the peritoneal

cavity was found filled with blood. A careful search for the bleeding revealed a severed hepatic artery. The caudal end was bleeding profusely, the cephalic end was plainly seen and practically no blood was coming from it. Both ends were tied and the abdomen was closed without drainage. The boy did very well for 10 days, and we were hopeful of his ultimate recovery but on the eleventh day there was a perceptible change in the facies. Some jaundice was present and signs of progressive emaciation were evident. He vomited occasionally. He presented the picture of an individual suffering from acute yellow atrophy of the liver. He died on the fourteenth day after operation. No postmortem was obtained.

The writer was not satisfied as to the exact cause of death in this case, although he was of the opinion that ligation of the hepatic artery was responsible. As this could not be proved by autopsy, it was decided to reproduce the injury in animals and watch the effect. Through the courtesy of J. Parsons Schaeffer, professor of anatomy, Baugh Institute of Anatomy, Jefferson Medical College, an opportunity was given us to make this experiment. Professor Schaeffer allowed us the free use of his experimental laboratory, and his advice and co-operation assisted us greatly in the conduct of our experiments. Associated with me were H. E. Radasch and B. Lipschitz, the former doing the histological work, the latter assisting me at the operations. My thanks are due these co-workers for their valuable advice and assistance.

Our first experiment consisted in ligation of the main trunk of the hepatic artery. This artery was recognized by its course over the structures contained in the reflected portion of the gastrohepatic omentum. The artery is small but the operation can be greatly expedited if a pad is placed under the animal's back. This brings the structures around the foramen of Winslow nearer the surface.

The animal gradually failed, there was a marked loss in weight, the respirations became more rapid, and death occurred on the fifth



Fig 1. Showing the effects of ligation of the hepatic artery in a rabbit. Necrosis of the liver. The cardiac end of the stomach has been severed and turned over the stomach to show the ligature on the hepatic artery.

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THE UTILITY OF THE RUBBER TUBE IN INTESTINAL SURGERY

By D. C. BALFOUR, M.D., F.A.C.S., ROCHESTER, MINNESOTA

THE difficulties which not infrequently confront the surgeon in carrying out operations on the large and small intestine are to a considerable degree overcome by his familiarity with the established principles of intestinal surgery, his ability to employ technical methods of proved value and to utilize the various mechanical devices which, in the development of the surgery of the gastro intestinal tract, have been devised to meet special conditions arising during the course of the operation. Of such mechanical devices the rubber tube deserves, I believe, more general and favorable recognition than is at present accorded it. Its usefulness in certain intestinal operations has been so evident, and the result of such operations so gratifying, that it seems advisable again to draw attention to these facts by presenting abstracts of case reports which are representative of some of the conditions under which we have employed the rubber tube, and which illustrate the utility of the tube in intestinal surgery.

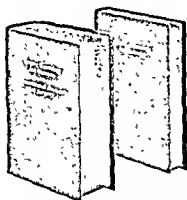
Such operations as resections of the sigmoid, rectosigmoid juncture, or upper rectum for malignancy, are and always will be frequently of considerable technical difficulty and of relatively high risk. In our experience in the Mayo Clinic the rubber tube has been an important factor in minimizing such difficulties and risks, and it was in certain cases in this group that the tube was first employed as an aid in accomplishing a safe axial anastomosis. Its value, under these circumstances, had been recognized for several years; Rutherford Morison, Lockhart Mummery and other English surgeons, were early advocates of its merit, and it had been employed in the Mayo Clinic for some time pre-

vious to 1910, when I described the technique of "tube-resections" of the sigmoid as then carried out in the clinic. Since that time certain modifications in the operative technique then described have been found advantageous, and, as is so frequently true, the higher efficiency which has come from such improvement in technical methods has made possible not only better results, but a definite increase in "operability." We have accepted as operable and successfully removed malignant tumors of the lower sigmoid or upper rectum, the operability of which, without the aid of the tube in the operation, would be at least highly questionable.

The tube used in such cases is $3\frac{1}{4}$ inch in diameter with $\frac{1}{2}$ inch caliber, with a lateral eye about 1 inch from its upper end. After the resection is made, the surgeon introduces the tube through the open end of the lower segment and passes it downward through the rectum and anus. There it is secured by an assistant and traction exerted upon it until the upper end of the tube is brought below the level of the cut end of the lower segment. The two ends of the tube are then properly

the midline stay suture at a corresponding point at the opposite side. At this latter point a heavy chromic catgut suture is begun. This suture is introduced from the mucous side and includes the mucous and muscular layers of the intestinal wall and is continued posteriorly in this manner until the stay suture, which was first placed, is reached. Our experience has been that if No. 2 chromic catgut is used and special care is taken to approximate the mucous membrane so that it does not extrude outside the bowel wall, a most satisfactory

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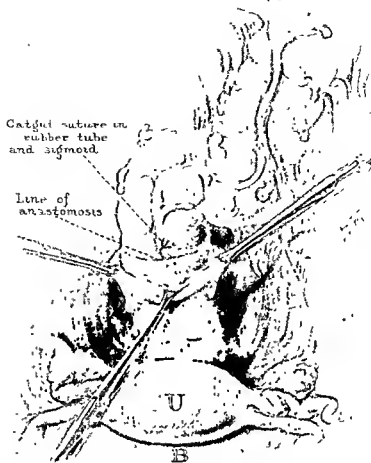


Fig. 2. Anastomosis completed, bowel ready for invagination

not even possible perfectly to unite the two ends of the bowel over the tube. It is surprising, however, to observe the excellent immediate and ultimate results in such unsatisfactory cases; and even in cases in which a visible defect in the line of the anastomosis was present (usually on the posterior side) a satisfactory convalescence has ensued. When a faecal fistula does occur, spontaneous closure can be anticipated. In the majority of cases it is quite safe to close the abdomen without drainage.

REPORT OF CASES

RESECTION FOR CANCER OF THE SIGMOID

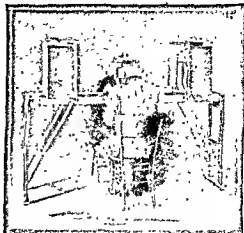
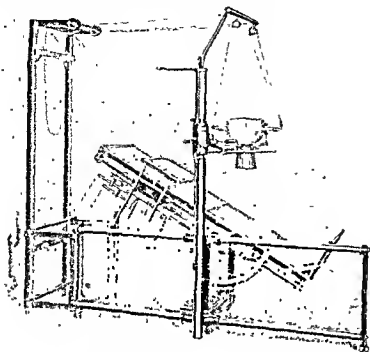
CASE 1 (A261807). Miss E. E. H., age 26, presented herself at the clinic February 27, 1919. She gave a history of having had symptoms suggestive of a partial obstruction of the large bowel,

formed a colostomy. Six weeks later the patient

by vagina and by rectum. An X-ray examination showed an obstruction of the colon about 5 inches above the rectosigmoid. The absence of any evidence of metastasis, the good condition of the patient and, particularly, our previous experience in such cases, led us to advise exploration. March 6, 1919, an abdominal exploration was made (W. J. Mayo). An incision 1 inch to the left of the midline gave easy access to the growth in the sigmoid. The growth proved to be a constricting cancer, of the napkin-ring variety, situated about 4 inches

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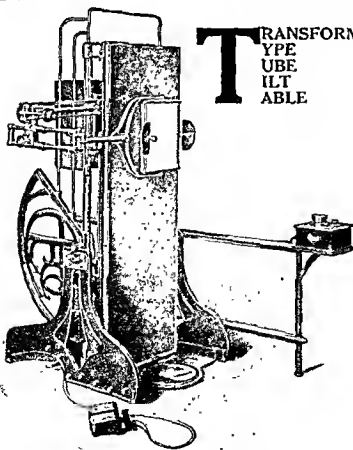


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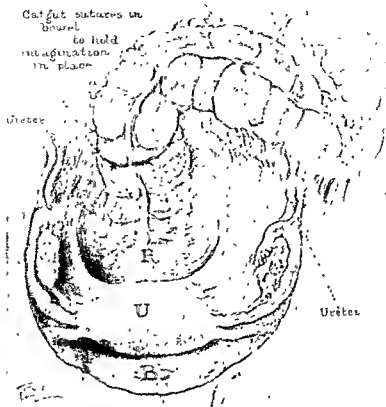


Fig 4 Operation completed

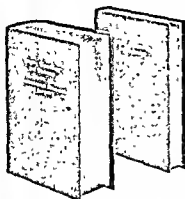
faecal fistula persisted and was chiefly the reason for which the patient presented herself at the clinic. Exploration (the closure of the fistula being the primary object) was clearly advisable, and was done March 24, 1910 (C. H. Mayo). A diverticulitis of the sigmoid was found which was adherent to the small intestine and connected with a small abscess in the abdominal wall. After the separation of these various adhesions, the sigmoid was resected and an anastomosis carried out by the tube method, as described above. The patient made a most satisfactory convalescence and has remained well.

The tube, then, can be used in certain cases of diverticulitis in a manner similar to that described, but it is not employed so frequently as in operations for cancer of the sigmoid because of the fact that the mass in diverticulitis is usually in the upper sig-

In cases in which primary resection is advisable, a satisfactory and safe method to employ is that advised by C. H. Mayo. After a circular anastomosis has been accomplished in the usual manner, the entire anastomosis line is drawn through an opening made at a suitable point in the omentum and attached to the peritoneum at the incision in such a manner that the suture line shows after the peritoneum is closed.

The wound can then be closed without drainage, or, if it is preferred, with mural drainage. This method has given us most satisfactory results. The general abdominal cavity is effectively walled off by the omentum, and, should any leakage occur, such drainage has no difficulty in finding its way into the incision.

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suffering daily from great accumulations of gas. This bloating usually came on between 4 and 6 in the afternoon, belching huge quantities of gas and slight vomiting usually gave partial relief. On two occasions the patient had attacks of abdominal cramps apparently of great severity, these were also relieved when the gas was expelled. The patient was a rather unhealthy appearing girl, but no evidences of gross disease could be determined. The abdomen was greatly distended and repeated purgation together with daily doses of belladonna failed to make any appreciable change in the distention. An X-ray examination showed a hugely dilated stomach, the bismuth remaining in the stomach for three days, and, although it was not possible to demonstrate positively that a pyloric lesion was present, surgical interference seemed indicated.

On January 2, 1910, an abdominal exploration was done (D. C. Balfour). General exploration immediately confirmed the physical examination and the X-ray findings. The stomach was dilated to great size, the lower border reaching almost to the symphysis. No actual lesion could be found at the pylorus to account for the obstruction, it apparently being due to a mass of adhesions extending from the hepatic flexure to the duodenum and pylorus. Beside this tremendous dilatation of the stomach was a dilatation of the proximal half of the large bowel, this portion of the colon being doubled on itself by another wide band of adhesions, stretching from the middle of the ascending colon to the left half of the transverse colon. The proximal half of the colon was dilated to about 10 or 11 inches, the distal half was little more than normal size. The primary cause of these two conditions was not evident. In the absence of any visible lesion, the most plausible explanation seemed to be that either a congenital abnormality in the rotation of the colon or some inflammatory process in childhood had left the colon in such a relationship that strong bands of adhesions were developed to the point of causing chronic obstruction and producing secondarily, from traction and trauma, the adhesions to the pylorus and duodenum. It seemed unwise in any event, to attempt any prolonged investigation (because of the risk to the patient and the uncertainty of securing any important information) to learn the cause of the condition and this decision was strengthened by the fact that it was perfectly clear what was necessary to be done to meet the symptoms of which the patient complained. Gastro-enterostomy was first performed, followed by colocolostomy, the latter anastomosis being made between the tremendously distended caecum and the normal sigmoid. A large rectal tube was passed through the anus, rectum, and anastomosis until the end was about 1 foot above the level of the colocolostomy.

The patient had a satisfactory convalescence, and has had complete relief from all the symptoms of which she complained.

RESECTION OF TRANSVERSE COLON

CASE 7 (A263828). Mrs. N. W., age 30, came to the clinic in March, 1910, chiefly because of discomfort which had begun in the epigastrium about three weeks before. This discomfort was usually associated with nausea, but vomiting occurred on only one occasion. The pain had never been severe and radiated only to the lower abdomen; temporary

developed recently, its radiation to the lower abdomen, and the relief on bowel movement, suggested the possibility of intestinal obstruction. An X-ray of the colon demonstrated a cancer involving the hepatic flexure and the first part of the transverse colon. Exploration was, therefore, advised and carried out March 4, 1910 (J. D. Pemberton). A huge cancer of the transverse colon was found involving the glands in the transverse

stance. A resection of the transverse colon well away from the tumor was done and a direct end-to-end anastomosis made by the C. H. Mayo method.

patient made a satisfactory convalescence and has shown no evidence of a recurrence up to the present time.

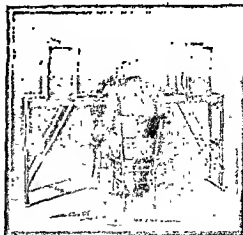
It is advisable under certain conditions to provide a safety valve for the large intestine to prevent spasm of anal or rectosigmoid sphincters at a time when distention of the colon should be guarded against. A rectal tube serves such a purpose excellently and may often be resorted to in place of a colostomy or appendicostomy.

CLOSURE OF COLOSTOMY

CASE 8 (A23976). Rev. J. J. L., age 18, came to the clinic December, 1918, because of a tumor in the left lower abdomen, attacks of pain, and partial obstruction for the past 2 years. The most recent attack was about 1 week before the examination in the clinic; the tumor had first been noted at this time. Three months before he had had a severe hemorrhage of bright red blood, two other such spells of bleeding had occurred up to the time of his examination. A diagnosis of duodenal ulcer had been

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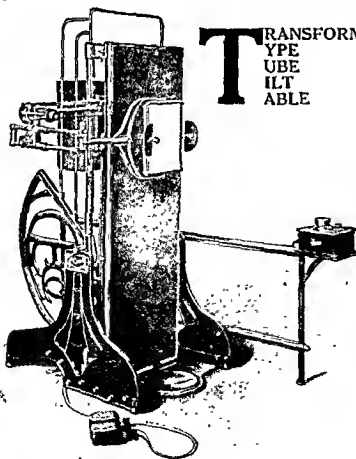


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the later work of Keith and Cannon, have resulted in establishing certain facts, the most important of which in the present connection concerns the presence in the gastro-intestinal tract of nodes or controlling sphincters. Variations in the functioning of these sphincters cause disturbances in the section of the alimentary tract immediately under its control, with secondary disturbances in segments higher up. The extent to which such disturbances (that is tonic spasm, atony due to sympathetic irritation, or irregular contractions due to parasympathetic irritation) may be responsible by reason of long-continued action for actual disease in the gastro-intestinal tract and associated organs is yet to be determined. It is quite reasonable to believe, however, that abnormal functioning of such sphincters continued over a long period may, with the addition of other factors, result in disease processes which otherwise would not have occurred.

One of the most interesting anomalies in the intestinal tract is congenital dilatation of the colon, a satisfactory

has been advanced, but, from the character of the dilatations which occasionally occur in other portions of the intestinal tract, it seems that chronic spasm of the rectosigmoid sphincter is an important factor in the development of the condition. If this be true, it is possible that in certain cases of Hirschsprung's disease, some method may be devised for forcible and repeated stretching of the sphincter at the rectosigmoid juncture, by instrumentation similar in principle to that so successfully used in cardiospasm. Should such treatment be possible, a formidable operation could be avoided.

Another point of interest to be mentioned in this connection is the suggestion which has been made by Sampson Handley in his article on ileus duplex. He believes that certain cases of postoperative intestinal paresis with

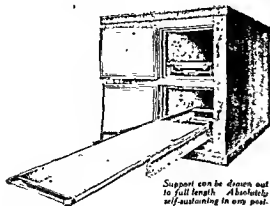
anastomosis are due to spasm, not only

of the pelvic colon (or at the rectosigmoid juncture), and that the percentage of recoveries from operations in such cases will be much higher if both the distended and obstructed ileum and colon are drained than if an enterostomy only is done. He accomplishes this procedure by an ileocolic anastomosis (ileum to ascending colon) combined with cæcostomy. In this manner he makes certain that in the 33.3 per cent of cases in which both ileum and sigmoid are obstructed a safety valve is provided in the catheter colostomy. We have found that in some of these cases a tube introduced through the rectum could be passed beyond the point of spasm at the rectosigmoid, thereby avoiding the necessity of a colostomy. In certain cases of paresis, the anastomosis of ileum and colon, rather than enterostomy, should be given more consideration than has been afforded it in the past.

The various conditions under which we have employed the tube frequently necessitate serious and difficult operations in which any factor which adds to the safety of the operation and to the prospects of a satisfactory result is most desirable. It has been our experience that in the rubber tube such a factor is available.

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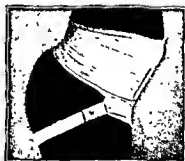
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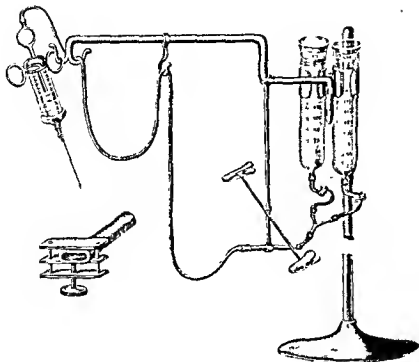


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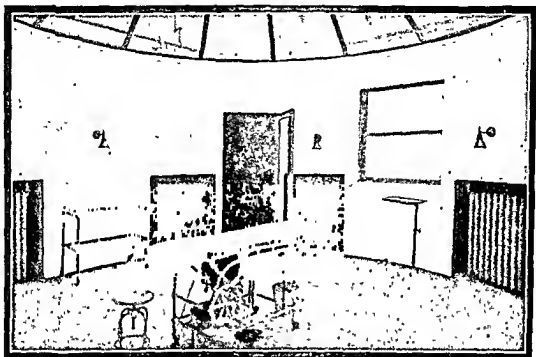
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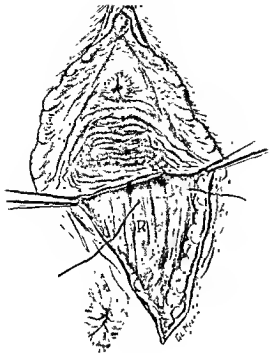


Fig. 3 The denudation

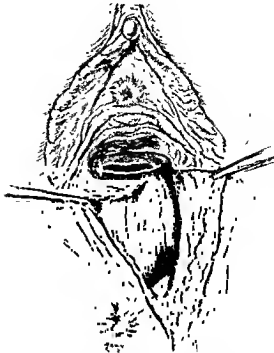


Fig. 5 Third row of sutures has closed the mucous membrane and suture the incision has begun

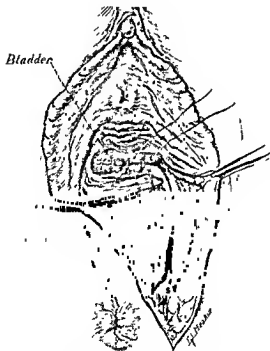
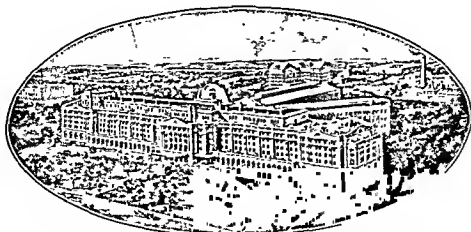


Fig. 4 First row of sutures has closed the bladder. Second row is begun

times. Therefore, inversion of the fistula had to be abandoned. In order to obtain a re-enforcement to the suture line closing the bladder, it was deemed necessary to bring muscle to muscle. Therefore, after trimming off the everted

and posterior vaginal mucosa, and sutured them in a horizontal line. This row of sutures was continued to the surface along the lateral vaginal wall, and along the skin in the line of the original incision.

The patient was then placed on her back and the patient



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Fig 3 Lateral view through



Fig 4 Operation complete before bowel amputation

opening the skin extension is protruded, so that the bowel in its permanent attachment, is sutured to the skin margin, around its entire circumference. In closing the wound the button is sutured back in its original position, as in a skin plant of full thickness.

When the bowel is cut across at the time of operation, or subsequently, a distinct skin separation results between the two open segments of the cut intestine, and no possible sagging back into the abdomen can result, thus producing a much more effective result.

The use of a rod support for the bowel at the time of operation is not needed as this graft acts as a support.

The diagrams which are presented I believe fully illustrate the steps in the technique which I have described.

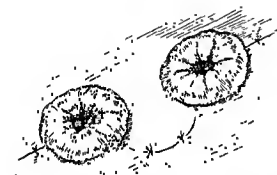


Fig 5 Operation complete showing distal and proximal ends.

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she began to menstruate, but it was not so profuse as usual, and instead of the menstrual period disappearing it continued. She bled some every day until yesterday when I operated upon her. It was only the day before I operated upon her that I felt I could detect something in the region of the right appendages. She had no cramps, no "gas pains," or other discomfort which might be taken as an index of a distention of the tube. I explained to her I was not absolutely sure that she had ectopic pregnancy, but felt it was reasonably certain on account of the continued bleeding, and that it would be well to do a curettement, when I would make an exploratory colpotomy and see what we would find.

Upon opening the cul-de-sac several drops of blood exuded. I delivered the uterus into the vagina hoping I might complete the operation vaginally. The tube, however, was held up by adhesions, and I could not bring it far enough into view to ascertain whether pregnancy existed or not, but the blood in the cul-de-sac was so convincing that I opened the abdomen and found this small ectopic pregnancy—5 millimeter in diameter—of the right tube.

The particular points are that the patient had ectopic pregnancy and no pain, that pain is not a necessary symptom in the diagnosis of ectopic pregnancy, and that irregular and continued bleeding are signs of the greatest importance in the consideration of ectopic pregnancy.

DR. HEANEY. In a second case in which the ruptured ectopic sac is 1 centimeter in diameter, the patient had exactly the same history except she had bled only for a week. Here I opened the cul-de-sac and removed the ectopic pregnancy through the vagina.

DR. CHARLES E. PADDOCK. I have no criticism to

DISCUSSION

DR. CAREY CULBERTSON: Dr. Schochet's work presents an extremely interesting phase of ovarian physiology and the society is fortunate in having the subject presented at this time. It brings up one or two other interesting points concerning which I should like to ask a couple of questions.

The first is in connection with the nature of the ovarian hormone and its relation to the liquor folliculi—whether there is one or whether there are two or three separate ovarian secretions as has been suggested by various writers on this subject is not so

the ovary

DR. CHARLES S. DALON. I would like to ask if

anterior chamber is not mechanical

accumulation in the cul-de-sac. If there was bleeding at the time you opened, why was not there an accumulation of blood at that time?

DR. HEANEY. In both of these cases I wondered afterward, if I had not found blood in the cul-de-sac, how far I would have gone in the exploration. In the older case, I do not think there were over 20 minims of blood in the cul-de-sac. In this case there was not more than a tablespoonful. It could not be palpated, it was not coagulated. In the second case, I may have been mistaken, but I thought I palpated the swelling of the right tube; the patient was very thin.

PHYSIOLOGY OF OVULATION

DR. S. S. SCHOCHET read a paper (by invitation) entitled, "The Physiology of Ovulation." (See p. 148.)

in the reaction of the enzyme to the granulosa cell and the theca cells?

DR. SCHOCHET (closing the discussion): In answer to Dr. Culbertson, as you well know, the study of enzymes and ferments is very difficult, and our knowledge on the subject of ferments is limited. I have searched through all the German works, especially that by Abderhalden, who has opened up that field of protective ferments of the body caused by foreign proteins to the organism. As to the origin of erepsin found in the graafian follicle, I can not say definitely where it is formed.

I had the good fortune at the time of working on this problem to have the valuable assistance of

day following operation. At postmortem, a marked, acute yellow atrophy of the liver was noted (Fig. 1). There were deposits of yellow-stained lymph on the diaphragm and stomach. In order to prove that the hepatic artery had been tied the femoral and carotid arteries were injected with red-colored starch. It was also shown in the drawing that the arteries of the abdomen were all thoroughly injected, but that the injection stopped at the point of ligation.

This operation was performed up to the present time on eight animals and all succumbed in from 24 hours to 5 days. The pictures presented at autopsy were like that shown in the illustration, but in varying degrees of intensity.

In a few of the experiments the right or the left hepatic artery was tied. This resulted in giving us the same picture but the lesion was limited to the area supplied by the branch tied at operation.

Coincidentally with these experiments our studies in the anatomical laboratory of the Daniel Baugh Institute were conducted. The illustrations¹ showing the hepatic artery in close relation to the cystic duct (6 per cent in the cadaver) impressed upon us the importance of a knowledge of the anatomy and of the variations of these structures which are found in the region of the foramen of Winslow.

There is no doubt in the author's mind that some unexplainable deaths following the operation of cholecystectomy may be due to the ligation of the hepatic artery. This can be avoided by opening at operation the gastro-hepatic omentum.²

Upon completion of these experiments and others relating to the gall-bladder and ducts, a full report of the findings will be given.

¹J. Am. M. Ass., 1919, LVIII, 892-895

²The reader is referred to a paper to be published shortly in the Journal of the American Medical Association illustrating this point

making the discharge less, the use of radium in hopeless carcinoma is decidedly contra-indicated. These patients suffer a good deal from inflammatory reaction after radium. We have found that the retention of fluid or inflammatory exudate is oftentimes due to a purely mechanical proposition. Occasionally the patients who come back after 2 or 3 weeks are found to have absolute stenosis of the cervix. Instead of leaving drains in for 3 or 4 weeks, it has been our practice to use a small cervical dilator when there is distress, or when the flow of inflammatory exudate is not satisfactorily free.

DR. WILLIAM C. DANFORTH: In the recent reports on radiotherapeutic activity, some authors have been using some form of adjuvant chemotherapy. I have noticed particularly in a report from the recent congress of French speaking gynecologists, held in Brussels in the fall, that one man speaks of using what he terms euzytol. A report of this same thing appeared in the work of two or three other men, and the object of it is to hasten absorption of the protein and make it possible to work with smaller doses.

DR. RUDOLPH W. HOLMES: Those who present contributions on cancer and its treatment usually manifest two fallacies in their deductions. Longevity is determined from the date of operation to death

inspection of cellular elements, or consideration of isolated signs or symptoms offer slight aid in this connection. As far as I can determine, the chief factor in the determination of malignancy lies in the metastases into neighboring lymphatics—and this only too often may merely be suspected, and not definitely known at the time of operation. If there be no involvement of the lymphatics a timely operation may mean no recurrence; in such instances of limited involvement possibly radium may be conducive of a cure, but where encroachment onto distant structures has occurred, probably, we see those whose life expectancy after active treatment has not been prolonged.

Some years ago I had a woman who absolutely refused consideration of any treatment. She went over 2 years with really perfect comfort, only to die of pneumonia at an early period of discomfort from the growth of her cancer. Dr. Curtis will probably remember my friend, 2 or 3 years ago, who came to me in the month of August. Examination merely showed a slight hardening of the cervix posteriorly. She had had merely a trivial leucorrhœa for some days which had distressed her. Cancer was suspected and she was advised to have an immediate hysterectomy. She refused every suggestion for treatment. A month later she had an extensive cauliflower growth, and about 2 or 3 months later she was dead. The first was a relatively benign case, the second a true malignancy. The first might

have been freed of her trouble by timely intervention, the second would not have derived a benefit.

We still are groping in the dark as regards treatment of cancer. Cancer still kills in the same proportion as it always has. I doubt that cancer is on the increase. The early recognition of cancer has enormously increased, and more exact interpreta-

Schmitz under what circumstances, if any, he uses deep X-ray as an adjuvant to the radium application.

dilated no matter how much the organ bleeds. This can be done readily and safely. The radium capsule is inserted and the vagina packed, which usually arrests the bleeding. In exceptional cases it may be necessary to use some hemostatic. Then we employ tincture of chlorid of iron, saturating the

Regarding the question of the rapid excision following operation after local arrest of the cancer, we can best answer this by briefly reciting the histories of two patients. A woman, 30 years of age, had a carcinoma in the posterior cervical lip which extended along the uterosacral ligaments to the anterior rectal wall. The patient was treated with radium, resulting in an apparent recovery. A year afterward she returned complaining of pain which radiated along the side of the rectum. A careful examination did not disclose any recurrence, but she had hemorrhoids. We cauterized the hemor-

a degenerated carcinoma. I am sorry I have not the slide with me, but the section contained carcinoma cells in all stages of degeneration intermingled with connective tissue. The incision was made in March. Within 2 weeks the woman had a very rapidly growing recurrence which was absolutely refractory to the radium rays. Evidently the trauma caused a rapid regeneration of the dormant cancer cells. The patient succumbed to a general carcinomatosis in June. That is exactly what occurs in the hysterectomies for cancer after apparent recovery. Though the cancer cells are dormant, it is possible that they resume their former activity when traumatized.

Another patient died suddenly from heart block 4 months after an apparent cure by radiumtherapy. We made a postmortem and removed the entire pelvic organs. The tissues were cut into blocks and

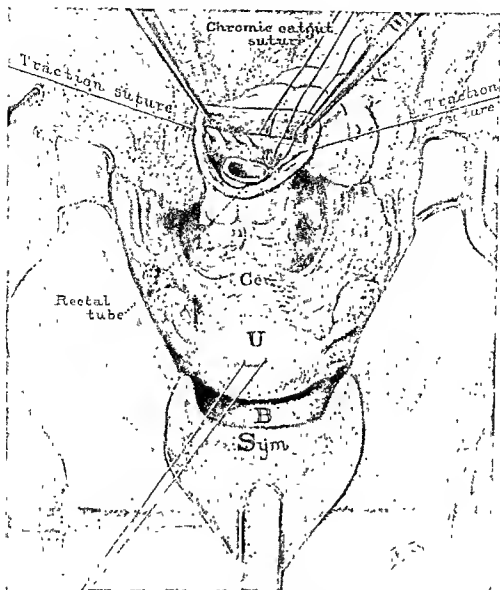


Fig. 1 Beginning of posterior suture line

closure posteriorly can be secured (Fig. 1). When the circular anastomosis is completed in the usual manner by a continuation of this chromic catgut suture, the tube is passed up the bowel by the assistant until it reaches a point from 3 or 4 inches to 1 foot above the level of the anastomosis. The correct height of the tube must be gauged by the ease with which it takes its position in the upper segment. The tube, resting in its best position in the upper segment, is secured by a suture of heavy catgut placed close to the anastomosis line, so that the suture will be invaginated with the anastomosis later (Fig. 2). The invagination, which we believe to be a very important feature of the operation, is then

made by grasping the lower segment with fine toothed forceps at a point of about 1 inch below the line of anastomosis; and by means of these forceps the lower segment is supported while the assistant pulls downward on the tube until the anastomosis line is drawn into the lower segment, and the anastomosis is completely covered (Fig. 3). The loose ring of the lower segment is then fixed to the upper segment by three or four interrupted sutures (Fig. 4). The bowel, at the site of the anastomosis, then has the same appearance as that of a small intussusception. In some cases it is not possible to produce such an invagination because of the extent of the resection, and in some instances it is

GORGAS

GENERAL GORGAS whose life was a continuous service to all, was stricken on Decoration Day and died on Independence Day, 1920. The power and influence of this unassuming gentleman, who was so universally loved, cannot be appreciated without estimating the qualities of his mind and the unusual accomplishments of his life's work. His mind was that of a crusader, with the action of a conventionalist; that of a progressive, with the mildness of a conservative. He possessed an honesty of purpose that caused him to think straight and judge his fellow-men with the greatest charity. He influenced men by this obvious honesty of purpose and his assumption that his adversaries, too, desired the whole truth. His scientific mind was warmed by his loving personality and his practical vision translated the discoveries of science into service for humanity. He was an indefatigable worker and specialized with enthusiasm along selected lines. His unselfish desire to aid endeared him to all men, and his tendency to

And, finally, he had the mind and the vision of a genius that illuminated dark places, that enlarged his horizon, and that gave him confidence to tread in unexplored paths. His honesty, his strength of character, his industry, his originality, his scientific training, his faith in his friends, his charming personality, his willingness to accept responsibility, his love of humanity, and his unusual insight into the meaning of things made him the man at whose bier the whole world is now paying tribute, and whom the coming generations of men will honor and revere.

In his chosen professions—physician, soldier, sanitarian—he accepted responsibilities far beyond the routine service that was required of the conventional worker in those professions, and he brought to bear upon his life's work the unusual characteristics of his being. His independence of thought led his scientific mind to reject the conventional notions of the cause of disease and to advocate new theories and new methods which revolutionized the therapy of ages and created a new medicine, and which, by their application, have rendered to civilization a service through which people will be benefited for all time.

When the crisis of the world-war occurred, this soldier, this scientist, this world-benefactor, when the ordinary man would have welcomed a well-earned rest,

of War, Congress, the medical profession, the lay soldier, and the people of the United States.

of the same department during the Spanish-American war.

above the rectosigmoid juncture. Resection seemed feasible and, after the separation of the colostomy from the abdominal wall, a portion of the sigmoid, including both the colostomy and the growth, was removed. Because of the firm attachment of the sigmoid to the left ovary and tube, it was necessary to remove both of these structures. An end-to-end union was then accomplished over a tube in the manner described above; the former abdominal incision was widely excised before closing, and two rubber tissue drains were carried down to the site of the anastomosis. The patient had a most satisfactory convalescence, the tube was removed on the eighth day, and both the new incision and the former incision were healed when she left for home three weeks after operation. Her present condition is excellent, and, although malignancy at such an age is associated with a gloomy prognosis, some prospect of cure can be entertained.

CASE 2 (A183641). Mrs. H. C. L., age 41, came to the clinic February 14, 1917, giving a history of symptoms of obstruction of the sigmoid over a period of the past 22 months. A mass could easily be identified in the suprapubic region, and on bimanual examination it proved to be in the left pelvis. Exploration was carried out February 24, 1917 (J. C. Masson). A cancer of the left rectosigmoid was found, the mass being adherent to the uterus, the left broad ligament, and the left lateral wall of the pelvis. It process an done and

1918, the patient had 1600 milligram hours, in August, 1900 milligram hours, and in January, 1919, 4200 milligram hours. At each examination the mass was distinctly smaller, with a corresponding decrease in symptoms, such as pain and discharge. In November, 1919, the patient returned to the clinic, requesting to have the colostomy closed. She was in excellent general health, weighed 224 pounds, and the absence of symptoms showed, at least, that the former malignant mass was inactive. On examination of the lower segment through the colostomy opening, the finger could not be passed because of the contraction which had taken place beyond the site of the former growth. Bimanual examination showed a small nodular movable mass high in the pelvis. A second operation was, therefore, performed November 15 (J. C. Masson). The portion of the sigmoid in which the radium had been used was in an atrophic condition, with marked thickening of the intestinal walls and, because of the extent of this induration, it was necessary to remove about 14 inches of the colon; the resected portion contained the colostomy and the thickened bowel. The operation was unusually difficult because of a short lower segment, the patient's obesity, and the fixity of the segments of intestine. The anastomosis, however, was finally accomplished over a rubber tube by interrupted sutures of chromic catgut, the bowel being intussuscepted about 1 inch. The anastomosis was care-

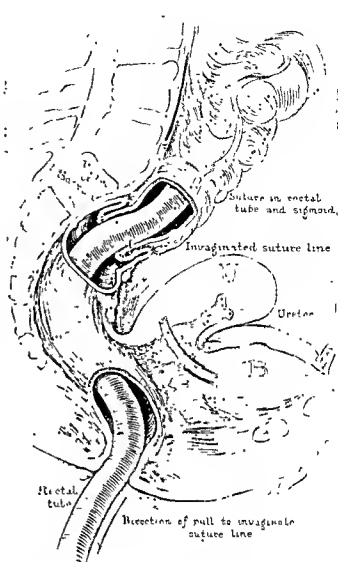


Fig. 3 Final relationship of the bowel and rubber tube (diagrammatic)

fully protected by suturing the omentum over it, and the uterus fixed to the anterior aspect of the anastomosis. It was difficult to determine from the gross appearance of the sigmoid whether or not any active cancer cells were present; it was very interesting, important, and gratifying to find that repeated pathological examinations did not show any evidence of malignancy. The wound was closed without drainage, the patient made a satisfactory convalescence, and left for her home December 17, 1919.

RESECTION FOR DIVERTICULITIS OF THE SIGMOID

CASE 3 (A33613). Mrs. J. G. F., age 52, had had an exploratory operation elsewhere in March, 1909, because of symptoms referable to the sigmoid region; and at the exploration three diverticula were observed in the sigmoid over an area of about 2.5 inches. A conservative operation was done, but leakage developed at the site of the operation and a

REPAIR OF FECAL FISTULA

CASE 4 (A201805) Mrs. M. A. H., age 46, came to the clinic October 3, 1919, because of a fecal fistula. An abstracted history shows that she had been perfectly well until about 2 years before when she had an attack of severe abdominal pain in the left lower abdomen lasting 3 or 4 hours, which was to some extent relieved by hot applications. Until May, 1919, she continued to have these attacks, which usually lasted about 3 or 4 hours and occurred at intervals of 3 or 4 months. In May, 1919, an attack developed as usual apparently, but could not be relieved by the usual measures, and after it had continued for about a week the patient was operated on elsewhere and 6 inches of the sigmoid resected, anastomosis being made by means of the Murphy button. The pathologic report made at the time on the specimen excised was "small round-cell sarcoma." The patient developed a fistula 3 days after the operation, suffered a great deal of general pain throughout the abdomen, and failed to show any improvement. In the physical examination carried out at the clinic on her arrival, the chief finding was a mass in the right pelvis, apparently on the rectal shelf, of a rather nodular character, and considered to be a recurrence of the malignant process. It seemed advisable to explore, however, and to close the fistula if feasible. Exploration was carried out October 24, 1919 (W. E. Sistrunk). Fortunately no evidence of malignancy could be demonstrated. The mass which could be palpated before operation, proved to be an induration due to scar tissue which appeared to be the result of the previous operation. The dissection of the fistulous tract led to the site of the former operation and at this point in the sigmoid there was considerable thickening and the bowel was firmly adherent to the posterior wall of the uterus. Having liberated the bowel, it was necessary to ex-

amine it, which was a
he firm inflam-
Anastomosis

was made over a tube in the typical manner, the tube being of particular assistance because of the fixity of the segments of bowel. The patient had a very satisfactory convalescence; a slight difficulty in the passage of fecal matter through the tube was overcome by the manipulation of a catheter through the rectal tube.

USE OF THE TUBE ALONE IN CHRONIC AND SUBACUTE OBSTRUCTION

CASE 5 (A177159) Mrs. J. D., age 39, came to the clinic November 6, 1916, complaining of attacks at irregular intervals of great abdominal distress due to an enormous distention of the abdomen with gas, with marked respiratory distress and cardiac pain. The attacks lasted frequently for from 2 to 4 days and were associated with a great deal of pain in the joints, especially the legs and shoulders. The patient was rarely entirely free from distress, although there were periods of from 12 to 24 hours

when she was reasonably comfortable. Gas was expelled by rectum and through a fistula which existed in one of the abdominal incisions. The significant findings in the physical examination were the marked abdominal tympany, associated with visible intestinal peristalsis, four scars of previous abdominal operations, and general evidences of chronic infection, particularly in the joints of the feet and hands. The history leading up to the present condition was, chiefly, that 4 years before, following a severe attack of abdominal pain, the appendix, uterus, and some gall-stones were removed elsewhere. Four weeks later it was necessary to do

For t
tively
ompara-
became
obstructed again with formation of the fecal fistula and in May, 1916, she was again operated on. The fistula was closed and several loops of small intestine liberated. Following this operation the patient continued to have the symptoms which have been described. At operation November 17, 1916, (E. S. Judd), a condition of general intestinal paresis was found. No point of definite obstruction could be determined. The small intestine, the cæcum, and the transverse and descending colon were especially dilated. Because of the repeated operations and the general character of the obstruction, there was apparently no method of anastomosis by which a good result could with certainty be accomplished. A long rectal tube was passed by rectum through the existing anastomosis and continued for about 18 inches into the small intestine. Immediately a great quantity of gas and fecal matter passed, and it was decided to leave the tube in place as long as pos-

would support the bowel so that disabling deformity would not later occur. In a recent report the patient states that she has remained well and free from the intestinal disturbances for which the operation was carried out.

This case is a striking illustration of the value of the tube in those cases of chronic or subacute obstruction developing as a late result after repeated operations. When the tube can be employed in such cases the uncertainty, which is so frequently felt by the surgeon, is converted into an assurance that the segment of the intestine which has been supported by the tube will be so molded in the new mat of adhesions that future obstruction at that point is most unlikely to occur.

A case similar in some features to the foregoing one, and having added points of interest, is the following:

CASE 6 (A253595) Miss M. G., age 20, came to the clinic December 16, 1918, with a complaint of

Medical College Following his course in the hospital there he at once applied for a doctor's commission in the Army and was sent to Fort Brown, Texas, as a Lieutenant. Out there Fate, possibly with a purpose, visited his system with the germs of yellow fever. This early conflict with the disease is said to have awakened his interest in it, and thus led to the eventual practical elimination, by his efforts, of this dreaded malady from the list of tropical plagues.

It was during the Spanish-American war and the years following that Gorgas performed the work that first brought him general attention, revealing his remarkable talent as an executive sanitarian. He accompanied the army in the Santiago expedition and then was put in charge of the yellow fever wards of Las Animas Hospital in Havana. While serving as health officer of the city, he seized upon the contemporary discovery of the mosquito transmission of yellow fever and adapted to it his campaign that effectively "cleaned up" the Cuban capital.

Thus he became the unquestioned choice of the Government in 1905 when it became necessary to make healthful the area surrounding what is now the Panama Canal. The French canal builders were twice defeated by seemingly ineradicable tropic disease, and to Gorgas is now given the credit for removing from the Isthmus the twin scourges of malaria and yellow fever, and making possible the engineering achievements of General Goethals.

The fevers and agues which destroyed the workers under de Lesseps disappeared before the careful, scientific methods so efficiently and tactfully put into force by the American expert. Colonel Roosevelt said that he made Panama "as safe as a health resort," and in connection with this successful proof that the tropics can be made a place where white men may live and labor it is interesting to recall these words written afterward by Gorgas himself—they reveal a dream of his:

"I dare to predict that after a lapse of a period, let us say equal to that which now separates the year 1909 from that of the Norman Conquest of England, localities in the tropics will be the centers of as powerful and as cultured a white civilization as any that exist in the Temperate Zone."

In the work of making the Isthmus healthful there were no bands playing or flags flying, fumigation and ash cans were prominent in their place. Off the beaten paths of the zone, and at the headquarters of every little stream was placed

one of those humble objects whose rattling has waked us of a morning—an ash can. A lamp-wick protruded from a hole near the bottom and drop by drop the larvacide, composed of crude carbolic acid, resin and caustic soda, would fall on the surface of the water and be carried away to the destruction of the mosquito larvæ which had to rise to the surface to breathe. These ash cans were called the outposts of the sanitation army.

Five years of the scientific care and thoroughness thus applied reduced the yellow fever death rate of the Isthmus from 8,000 to just nineteen.

at the request of the British Government to investigate conditions in the Rand mines, where thousands of Kaffirs were dying from epidemics of pneumonia. In 1914, having served in Panama as a Colonel and Assistant Surgeon General, he was promoted to Surgeon General, and the following March he was made a Major General. In 1915, also, he became a permanent Director of the International Health Board of the Rockefeller Foundation, and his last great work in the tropics was accomplished under the auspices of that body. This was his campaign against yellow fever's last stronghold, Guayaquil in Ecuador. He returned from that trip last October after a complete success.

In the recent war, General Gorgas, as Surgeon General of the United States Army, reduced the rate of mortality for our army to six-tenths of 1 per cent. This is a lower rate than that of the Japanese Army, which had previously been cited as the model of hygiene in all military history.

strongly in favor of according them positions in keeping with their high professional attainments.

Among the many honors conferred upon General Gorgas may be mentioned the gold medal of the American Museum of Safety, the Mary Kingsley Medal from the Liverpool School of Tropical Medicine, the Presidency of the American Medical Association in 1908, an Honorary Fellowship in the American College of Surgeons, and the Knight Commandership of the Order of St. Michael and St. George. He was a member of several other medical organizations and a United States delegate to the first Pan-American Medical Congress in Santiago, Chile, in 1908.

made elsewhere. The physical examination disclosed a hard mass which could be readily palpated both through the abdominal wall and manually.

licz three-stage operation was done. A satisfactory

-- a clamp was

The further

small group

of patients in whom the bowel does not completely close after the routine three-stage Mikulicz operation, and in April, 1919, he returned. An extraperitoneal closure of the colostomy was done over a Smithies stomach tube, which was introduced through the colostomy and pushed down through the anus, with the upper end about 2 inches above the point where the bowel was closed. This procedure completed the satisfactory result; the patient is at present apparently in perfect health.

Ineffective attempts to close colostomies are occasionally met with. Successful closing sometimes requires enough suturing of the opening in the bowel to constrict the lumen beyond what appears to be the limit of safety. The tube serves a useful purpose by preventing further contraction; and by conveying gases and faecal matter past the point of closure it gives the best possible condition under which healing may occur. In such cases the tube is introduced through the colostomy and passed out of the anus, leaving the upper end about 3 or 4 inches above the point of closure; it is removed in about 10 days.

The foregoing abstracted cases illustrate the wide utility of a rubber tube in intestinal surgery, and I am convinced that further experience in extending its use will show that in the past we have occasionally overlooked its value because we have failed to recognize, or have forgotten, certain sound principles in the surgery of the gastro-intestinal tract. Such principles could have been well carried out in certain cases by the use of the rubber tube. The mechanical functions of the tube are chiefly called upon in its employment in axial anastomosis, closure of colostomy, and faecal fistula repair. In such cases, its first service, as I have pointed out, is the prevention of gross leakage from an insecurely closed intestine. We have repeatedly met with cases in which the extent of bowel resected has been so great or the segments so fixed, or for both reasons, that

approximation has been made difficult and an unsatisfactory union has resulted, on the mesenteric side particularly. When, however, such an anastomosis has been made over a good sized rubber tube the results have been unmistakable evidence that the tube, immobilizing the two segments of bowel as it does, gives protection against leakage, because of the security against undue tension, with the possible results of a weakened or ruptured suture line. Faecal fistulas which occur under such circumstances have been insignificant, as a rule healing spontaneously in a short time.

A further and most important mechanical function of the tube is observed in its actions as a splint. The danger of postoperative obstruction is always to be considered in those cases in which extensive scar due to previous operative interference or the adhesions of inflammatory exudates are present, for in the inevitable reformation of adhesions, the bowel may be fixed in such a manner that immediate or later obstruction is possible. In such cases, the tube within the bowel prevents any kinking or malposition which might occur in the reorganization of the exudative products which takes place in the first few days after operation. The value of the tube under such conditions is well illustrated in Case 5, in which the operation, which was anticipated to be of unusual difficulty,

that in the tube we have available a means of carrying the contents of the intestine through a point of actual, impending, or potential obstruction in the intestinal tract, and that it can serve a most useful purpose in cases in which such danger is a possibility.

The possibility that the tube may be of service in certain disturbances in the neuromuscular mechanism of the intestinal tract is suggested by Case 6; although the immediate cause of the condition was not due to spasm, the primary cause may have been. During the past few years only have we gained any accurate knowledge of the neuromuscular mechanism of the gastro-intestinal tract. The original investigations of Gaskell, and

selves to the editor of SURGERY, GYNECOLOGY AND OBSTETRICS, the official journal of the American College of Surgeons. First, its broad idealism defined in the fourth paragraph of the editorial in reference to the growth of surgery in which it is stated, "It is the hope of the editorial board that the *Archives of Surgery* may be the organ of expression in this growing field of surgical education", second, "that it may furnish an opportunity for the publication of original articles pertaining to research and investigation in those subjects which lay the foundation for sound surgical progress", third, that the new publication may assist in overcoming the unevenness of surgical progress; and, fourth, that it will seek to advance the knowledge of the fundamentals and philosophy of

surgery until they will balance with the clinical and technical

The editor, after enumerating these ideals, adds that "the *Archives of Surgery* will attempt at least to enlarge the surgical horizon and assist in establishing surgery on a sounder basis"

With these ideals, with an editorial board of young, practical surgeons, with an active editor of international reputation as a surgeon and teacher, and with the backing of a great association of unlimited financial resources, the new candidate for surgical honors, with its dignified appearance and filled with material from the pens of influential surgeons of our country, should aid in maintaining the prestige of the surgical publications of America.

A SELF-FILLING SYRINGE FOR LOCAL ANÆSTHESIA¹

By W WAYNE BABCOCK, M.D., F.A.C.S., PHILADELPHIA

LOCAL anæsthesia by weak procaine-epinephrin solution, the safest of all methods of anæsthesia, has failed to receive the acceptance it deserves, partly because it is technically inconvenient and partly because operators have so often used drams or ounces of solution when pints are required. The surgeon who, for a gall-bladder operation on a very obese patient, depends on two ounces of solution, will never become so enthusiastic over local anæsthesia as will the operator who after carefully narcotizing the patient with morphine and hyoscine injects from a pint to two quarts of the solution and is rewarded by having his patient doze peacefully during the operation and leave the operating table in better condition than when he was placed on it.

The injection of large quantities of solution by the usual method is not only time consuming, but tiresome to the operator's hand. If a syringe of large capacity be used, the pressure required makes the injection difficult; while the use of a small syringe necessitates such frequent refilling as to make the procedure tedious. The method of injection by a hand syringe has in our opinion important advantages over the use of pressure injectors. The operator senses the character of tissue injected by the resistance encountered, is always aware of the rapidity of the injection, and above all has instantly available by slightly withdrawing the piston, a test as to the penetration of a blood vessel. The simple modification of an ordinary record syringe herein illustrated has been found very useful in a series of extensive operations under local anæsthesia upon the peripheral nerves, the brain, spinal cord, joints, bones, the neck, chest and abdomen.

A five or ten cubic centimeter record syringe is modified by drilling the piston and introducing a one way valve (Fig. 1). For the solid piston rod a small tube is substituted, the free end of which is fashioned into a comfortable ring for the operator's thumb, having a small hose connection. Two finger rings are brazed to the upper metal fitting of the syringe. For use the syringe is connected by about 1½ meters of small (2 to 4 millimeters) rubber tubing to a 250 cubic centimeter burette filled with the anæsthetic solution and hung about 125 centimeters above the level of the patient. All air having been expelled from the apparatus, the needle is introduced into the tissues, and the injection started, the syringe

filling on each withdrawal of the piston. During the infiltration the operator tests for the puncture of blood vessels by occasional short, sharp withdrawals of the piston, the appearance of blood in the syringe warning him that the needle must be moved before the injection is continued. With this syringe 500 cubic centimeters of solution may be injected into the tissues in three minutes with very little fatigue. Should the operator desire to use solutions of different strengths, two burettes with an appropriate Y connection are employed (Fig. 2). Satisfactory syringes of this type are made by Lentz and Sons and the Harvey R. Pierce Company, of Philadelphia.

Where a succession of operations under local anæsthesia is to be performed, only the syringe, needles, and connecting tubing need be re-sterilized between the operations. The double burette-holder figured, is designed to facilitate this; the syringe holding arm and adjacent tubing being detached for re-sterilization between operations.

We employ a one per cent, and one-quarter per cent, solution of procaine (novocaine) containing one part to 100,000 of epinephrin (about ¼ tablet or 4 minims of 1:1000 epinephrin to each 30 cubic centimeters) in decinormal salt solution, and consider 500 cubic centimeters of a 1 per cent or 2000 cubic centimeters of the ¼ per cent solution about the maximum quantities to be employed. We have exceeded these amounts in a number of cases, however, without untoward result. In operating upon a shocked, toxic, exanguinated, or dehydrated patient, the rather lavish but skilful use of local anæsthesia is

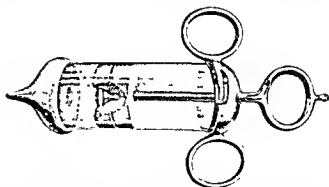


Fig. 1. Modified record syringe showing conical valve in piston. The valve which should be of thin metal, may readily be removed for cleansing, by unscrewing the small perforated plate.

¹Developed at U. S. General Hospital No. 6, Fort McPherson, Atlanta, Georgia, Colonel T. S. Bratton, Commanding.

Realize that the mountain ranges of South America border on the western coast and that many of their highest peaks are observable from the sea. Realize that these mountain ranges are full of the richest minerals and that they have been scarcely scratched by modern mining methods. Realize that a rainless coast and most beautiful valleys are lying below, ready to have the water from the mountains poured onto their soil, which will make them produce and become as beautiful as the reclaimed deserts of California. The prehistoric civilizations of Peru appreciated and utilized these facts and made themselves the envy of the later civilizations that conquered them for their wealth, and who now, after four centuries have passed, are about to imitate their methods, utilizing for the purpose all of the added facilities of modern science.

III. THE MAP OF CHILE

Look at the map of Chile! Do you comprehend the immense possibilities of that narrow country when she carries out the plans which are now under contemplation and when her efficient people work out the dream of her engineers? Billions of tons of gold, silver, copper, and other minerals are buried in that bulwark of mountains on her eastern border. Between the mountain barrier and the Pacific Ocean lies the strip, one hundred and fifty to three hundred miles in width, extending from the tropics on the north to the Temperate Zone and almost the Frigid Zone on the south. The northern half of this country requires water to make its valleys equal the productiveness of Southern California. The mountains near at hand will yield to the machinations of her engineers, and the gold and wealth will pour into her lap. The country requires power for manufacturing, fuel for lighting, and in the southern portion facilities for heating. Her engineers have only to tap the nearby, never exhaustible supply of water from the mountains to get an abundance of power, light, and heat, and that with the utmost economy. And this is what they are doing. We shall have to watch and wait but a short time until these Yankees of the southern continent will win our admiration and applause through their accomplishment of greater wonders than those already recorded.

Speaking of Chileans as the Yankees of South America, the Chileans, with their generous sense of humor, are already facetiously reversing the compliment by calling our complacent people the Chileans of North America.

Then look at the countries to the east of that great spinal column of the continent. Travel on

a broad gauge train of sleepers from the Andes to the metropolis of South America, and watch for thirty-six hours a duplication of the rich plains of Nebraska, Kansas, and the Dakotas; study the map and trace the net-work of great water courses which find their origin in that same great spinal column, and which follow their courses for thousands of miles through Brazil, Paraguay, Uruguay, Colombia, and Venezuela. Can any one begin to appreciate the possibilities of that vast area? The dread of disease and pestilence of the tropics has been forever removed by a self-sacrificing group of scientists of our own medical profession, led by our honored Gorgas. Even

IV. LIMA, PERU

In conversing with my friends about the countries visited by us, they ask a number of questions about concrete facts regarding South America. I shall endeavor to summarize answers which, in a very imperfect manner, will reply to some of these interrogations—facts that I would have been pleased to have had fixed in my mind before making the recent trip. In furnishing this information, naturally I must draw upon material laboriously worked out by others, especially

prepare his mind for a sympathetic reception of South American travel by reading the romantic history of Peru, Prescott's "Conquest of Peru," because it will furnish the atmosphere through which one should approach this interesting continent. William A. Reid of the staff of the Pan-American Union was saturated with this atmosphere when he began his description of Lima with the following:

"In awful pride enthroned above the skies
Peaks upon peaks in matchless grandeur rise
'Mid frowning glaciers on whose snowy crest
The savage culture builds its craggy nest."

journey up the mountains to meet the Inca chieftain at Cajamarca. Indeed, Peru appeals to the present-day visitor as potentially perhaps as did the ruined Andean cities mystify the Incas when the latter race first roamed amid the fastnesses of the great mountains.

Interesting it would undoubtedly be if we could turn back the pages of the centuries and see the builders labor-

A LARGE INACCESSIBLE VESICOVAGINAL FISTULA FOLLOWING HYSTERECTOMY

By JAMES A. CORSCADEN, M.D., NEW YORK CITY
From the Department of Surgery, Columbia University

THE patient L. L., Hosp. No. 35253, age 52, unmarried, was in normal health, and had passed her

menstruation after the insertion of radium was inserted into the uterus and removed after 24 hours. Pathological report: adenocarcinoma of uterus.

Operation, November 12, 1919. Complete abdominal hysterectomy. Double salpingo-oophorectomy. Pathology: The abdomen was negative except for the uterus, which was symmetrically enlarged to 8 by 6 centimeters. The anterior surface of the uterus seemed irregular. There

was no evidence of metastatic disease in the lungs, liver, or other organs.

The patient was referred for radium treatment with a diagnosis of uterine bleeding, due to menopause, and fibromyoma of the uterus.

Examination showed only slight enlargement of the fundus and a bloody vaginal discharge. Pre-operative diagnosis: carcinoma of the body of the uterus.

Operation, June, 1917. The uterus was curetted, and suspicious fragments of tissue removed; 50 milligrams of

vagina

The postoperative course was smooth except that on the third day urine was passed by vagina, and continued in this manner until the last operation on November 12, 1919.

admitting the index finger into the bladder. The margin of the fistula showed a bit of everted bladder mucosa.

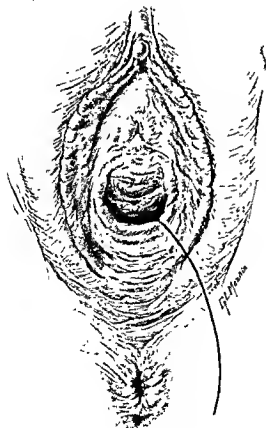


Fig. 1. The incision



Fig. 2. The incision completed and the fistula exposed.

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To-day Peru covers an area equal to Texas, New Mexico, Arizona, Nevada, and Utah combined, or, to be more specific in figures, about 679,600 square miles. This extensive territory comprises three distinct geographical regions—the dry coastal lands, varying in width from 20 to 80 miles, the lofty mountainous section, which in

and land passengers and freight directly on the coast. Callao has about 35,000 population and is a busy, cosmopolitan city.

The City of the Kings, which is now generally known

foundation stones of the cathedral on a hillside near

and their predecessors, who builded far inland upon the localities difficult to reach. Lima, with its 200,000 population today, has been a long time growing to present proportions. From the early days of 1535 the growing city passed through every phase of romance, struggle, and excitement.

Early in the nineteenth century the growing discontent

but it was
24 that the

book could be written about the vicissitudes

which provide courses in commerce, agriculture, military and naval sciences, also a recently established school of arts and crafts is doing excellent work.

the home of a national museum, one of this nature, to modern of by-gone

faces

In speaking of the climate of southern Peru, this writer reminds us that while this country is near the Equator, the north-west flowing sea current and the elevated mountains furnish a climate in which the hottest days rarely register higher than eighty degrees Fahrenheit.

by suburban extension, practically joined hands with the sea-coast city, Callao, and by railroad, trams, cars, and motor roads these two cities have become practically one, extending from the blue

bladder spasms. There was considerable pus in the urine for 10 days. No urine escaped through the vagina from the time of the operation until the latest report, which was December 25, 1919 (a little over two years after the first operation), when the patient reported that she had no symptoms.

The interesting points in the case are:

1. The patient was referred for bleeding of the menopause, although this bleeding began two and one-half years after her last period.

2. It is vitally important to do an exploratory curettage before introducing radium.

3. The rectal wall may be used to close in a vesicovaginal fistula when the uterus has been removed.

4. It is important to keep the patient, after repair of a vesicovaginal fistula, in the prone position for at least a week.

PLASTIC ABDOMINAL INCISION FOR COLOSTOMY

BY G. MILTON LINTHICUM, A.M., M.D., F.A.C.S., BALTIMORE

Professor of Proctology, University of Maryland, College of Physicians and Surgeons, formerly Lieutenant Colonel, Medical Corps, U. S. A.

IN dealing with a rectal carcinoma, one is always confronted with the question as to what is advisable and as to the possibility of complete removal and permanent relief. The best manner of extirpation is still a much discussed question; whether one of the old extra-abdominal routes should be used, or the combined method, the latter probably being most in favor. There is a growing tendency, however, merely to give relief in an increasingly larger number of cases, for experience shows that the disease is often farther advanced than the superficial appearance would indicate.

The ill favor in which the artificial anus has been held is lessening with the more improved methods of tunneling under the muscles or skin as suggested by Witzel, Borchardt, Weir, and Tuttle, thus providing very satisfactory control of the new anal orifice.

It is not my purpose to present any argument as to the merits of any of these methods, but to suggest, in such cases as demand a permanent artificial anus, that which may be called a mortise and tenon skin incision which presents some advantages over the straight incision. This technique also possesses advantages in strengthening the usual coaptation in other abdominal incisions, such as for herniotomies, or in multiplying cross union in long abdominal incisions.

As the diagram shows, instead of being continued in a straight line at a mid-point, the primary incision for the artificial anus is diverted to one side, so as to form a neck with a width of 1 centimeter to a button shape terminal of 1.5 to 2 centimeters in diameter. When the bowel is brought through the incision, an opening is provided through the mesentery by suitable suturing where the gut is kinked or bent. Through this

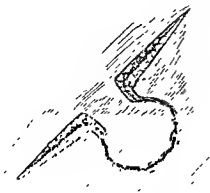


Fig 1 Primary incision.

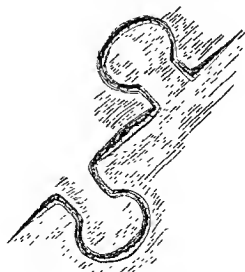


Fig 2 Cross-tenoning long incision.

scantly populated. It has two important cities that possess many points of interest to the North American traveler, and several sea-coast towns of growing importance.

lin
loos

200,000. It is a cosmopolitan city, having among its inhabitants 5,000 Germans, 5,000 English, with Belgians, French, Austrians, Australians, and a few from a number of the other Latin-American countries. The United States and Canada are represented by a few hundred, with a sprinkling of Chinese and Japanese.

About 400 years ago, in 1536, Juan de Saavedra, a Spanish officer, founded this settlement, and gave it the name of his birthplace in Spain. It passed through many vicissitudes, including several destructive earthquakes. Like many of the other South American nations, a wave of independence spread over Chile, and the Spanish authorities were deposed in 1810, but it was not until 1818 that the country threw off the Spanish yoke and became a republic. Valparaiso became a flourishing city, but in 1906-7 it met the fate of San Francisco and Kingston. It was partially destroyed by earthquake and fire. It is now rebuilt, and shows practically no signs of its disasters. Valparaiso lies in the southern continent in latitude similar to Buenos Aires, Cape Town, South Africa, and Sidney, Australia. It is directly south of New York, and the distance is 8,460 miles. Valparaiso occupies a flat area around a symmetrical indentation of the sea, a bay nearly three miles in extent of coast line. Beyond the flat area arise steep hills, indented with ravines, and the beautiful city extends from the flat area around the bay onto the hills above, lending from the bay and port on of Chile varies from near freezing in the winter to eighty-five degrees Fahrenheit in the summer.

In a bird's eye view of this Chilean business center, one will be attracted by the steep, inclined tram-car ways, which transport the population from the low town to the hills above; its splendid water supply, the naval academy with its view of the city heights, will especially suburban resorts, like Viña del Mar, with its water sports and resident attractions.

Valparaiso, while a commercial city of importance, strikes one as an attractive place in which

to live. It has the green of its trees, and the wealth of color of the flowers in its patios and its boulevards.

VI. SANTIAGO

But our time is limited, and we fly away to continue our bird's eye view of the capital city of this republic of the west and south. The great white-capped mountains to the east, which can

find the city itself to be a natural amphitheater of growing produce, of tropical foliage and summer color, a proud metropolis of modern beauty, which, nearly four hundred years ago, before the land of the United States had been traversed by the Puritans or the cavaliers, was founded by the dauntless Pedro de Valdivia with his little band of Spaniards, and which has grown as a testimony to his wisdom. Even then this little valley, eighteen by forty miles, protected by two great mountain ranges with the island mountain, Santa Lucia, in its center, washed by the waters of the Mapocho River, must have been a beautiful spot.

struggle that has so many times been duplicated in the settlement of the Western Hemisphere, that has tried the souls of men, and, when successful, has developed nations of superior people. The bravest and fiercest tribe of Indians of all the continent had to be subdued in the building up of this settlement, the Araucanians; but the Chileans admire a brave adversary, and now a statue of one of their most resourceful warriors, Caupolicán, who was captured and executed by the Spaniards, adorns the plaza on Cerro Santa Lucia.

Allow me to quote from another of the bulletins of the Pan-American Union, written by Edward Albes, one who observed as a stranger the externals of an interesting city. He speaks of a

the cities on the east coast of South America:

TRANSACTIONS OF SOCIETIES

CHICAGO GYNECOLOGICAL SOCIETY

REGULAR MEETING HELD MARCH 19, 1920. DR. ARTHUR H. CURTIS, PRESIDING

TWO CASES OF TRUE KNOT OF THE UMBILICAL CORD

DR. C. HENRY DAVIS, Milwaukee, Wisconsin: I wish to exhibit two specimens of true knot of the cord, recently obtained at Columbia Hospital, Milwaukee.

The first is the placenta from a VI-para, whom I delivered November 17, 1919. She had a moderate hydramnios and a very active baby. Fortunately in this case the baby, an 8 pound, 12 ounce girl, was delivered just 10 minutes after I ruptured the membranes. The cord which was once around the neck evidently pulled the knot tight when the head descended to the perineum. After delivering the head the portion of the cord around the neck was found to be distended but not pulsating. The portion next the child was found collapsed on delivery. The child was born in an asphyxiated condition but was resuscitated with little difficulty.

The second specimen was obtained 3 days ago by my colleague, Dr. Copeland. The patient, a multipara, stated that the baby had been very active at the beginning of labor but that a little later no movements were felt. Shortly after the patient went into labor she began to bleed. On admission to the hospital Dr. Copeland diagnosed a premature separation of the placenta. He dilated the cervix and delivered a still born fetus. The cord

INCLINED HIP REST

I wish to report the use of an inclined hip rest in the delivery of obstetrical patients. For a number of years I delivered many of my patients on the flat douche-pan. Later a rectangular basin was placed under the hips after the final cleansing. Some months ago it occurred to me that by using an inclined hip rest it would be possible to secure not only the benefits of having the patient elevated from the delivery bed, but also the relaxation of the perineum which comes from the Walcher position.

the legs and down between, far enough to expose the vagina but above the anus. Faecal material, lochia

which has passed over the anus, etc., goes on to the bed under the sheet and the field does not become contaminated as with the usual plan of using leggings and the sheet under the hips.

This hip rest may be used for forceps or breech deliveries. Thus far I have had occasion to do two mid-forceps and one outlet forceps deliveries without any shifting of the patients. This means not only a saving of linen but also of time, which is an important factor in some cases. In my work this hip rest is such a useful device, I wish to recommend its trial. It can be used on any delivery bed.

DR. FRANKENTHAL: What was the condition of the second baby when it was born? I think you said it was dead.

DR. DAVIS: There was no maceration as it died during labor from the true knot or the premature separation of the placenta.

REPORT OF A CASE OF RUPTURED ECTOPIC SINGLE OVUM TWIN PREGNANCY

DR. WILLIAM C. DANFORTH: I wish to show a case that occurred recently—a ruptured, ectopic, single ovum, twin pregnancy. One fetus is shown in the sac, and the other is lying loose in the bottom of the basin. The patient was a woman, 35 years of age, who had had one pregnancy 9 years ago. Subsequently she had had no pregnancies.

While visiting in Chicago she began to have abdominal pain after having missed one period. At the time she was first seen there was nothing suggestive of ectopic pregnancy. She was watched by Dr. Vruwink for some days. After the clinical picture became clearer, the woman was brought to the hospital, was operated upon, and we found an ampullar ectopic pregnancy which ruptured, giving the clot shown in the specimen which, on section, shows a single egg twin pregnancy, one fetus being in position. The other fetus became detached and is floating about at the bottom of the pan. The opposite tube was very much enlarged, with the fimbriated end closed and was excised.

REPORT OF SMALL ECTOPIC PREGNANCY

DR. N. SPROAT HEANEY: This patient came to see me rather recently on account of sterility. Her last pregnancy was 7 years ago. I found nothing on gross palpation to account for her sterility. On February 20, the expected date of her menstruation,

most of the picturesque and dignified gifts of nature, have created an efficient government, developed a strong commerce, builded hospitals, libraries, art palaces, and important universities with strong professional colleges, including medicine, law, theology, and engineering

VII OVER THE ANDES

Continuing one's flight from the coast across the narrow country, after observing its two principal cities, the foot-hills of the Andes are reached, and the climb of this bulwark of the continent is begun. From Chile to the Argentine, via the Trans-Andean Railroad, is an experience to thrill the most experienced traveler. Again I purloin from another pen, and this time give the viewpoint of a woman by setting down a page from Mrs. Martin's log, written to some friends at home:

"I was very glad to have seen it before my journey of Monday."

The grain is spread on a hard, earth floor, four or five horses harnessed abreast are driven furiously round and round over it, suddenly stopped, reversed, and the process repeated until the grain is trodden out. It all seems very curious when scarcely a stone's throw away a stream

roofs, and sometimes mud huts or adobe, but almost universally surrounded by lovely flowers and flowering hedges. Often we saw open-air ovens with some sort of a roof protecting them, and we were uncertain whether they are intended for the family bake or for some process of coke burning. The coal used by the railways comes in small, uniform blocks, about 4 by 3 by 9 inches, and is made from very fine soft coal and coal dust; so here, possibly, lies the *raison d'être* for the ovens.

As we climbed into the mountains, they became more and more austere with quite a bit of snow here and there. Soon after leaving Rio Blanco, a cog road is employed which jiggles one slowly along at an almost perpendicular climb. All in all, it was a wonderful morning, with constantly changing peaks coming into view, and an ever new panorama unrolling itself before us. Someway, in our mountains at home one seems to see one particular mountain for a long time, and then another, but here it

train slips into one of the greatest tunnels of the world. It is ten thousand three hundred eighty-four feet long and ten thousand seven hundred seventy-eight feet above sea level. That is "fifteen hundred feet higher than the Stelvio Pass carriage road, and thirty-five hundred feet

deemer."

From the little station of Las Cuevas we could see nothing of the real statue, but we eagerly strained our eyes toward a dark patch in the snow some three thousand feet above us and drew what satisfaction we could from our distant view. As we came into the Argentine, the

and they
look, and

Inca, our

result when the train stopped, I got out and, climbing into a waiting carryall, was whisked away to the nearby

noon sun

us. At one place we passed the spot where a train, carrying only its crew, left the track and pitched into the water below, where we could still see the cars lying bottom

Prof. Gustav Mann, exchange professor from Edinburgh. He gave me many helpful suggestions in the study of the chemistry of the various proteins found in the liquor. The enzyme present which I have been able definitely to prove corresponds to the enzyme which is found in all tissues of the body, namely, erepsin. There are certain tests which indicate that the protein molecule is broken up by other enzymes than erepsin; it is indicated by certain end products of protein digestion. These are the other enzymes I have alluded to in a hazy way. It requires further study along these lines before I can speak definitely of the other enzymes.

As to the presence of hormones I cannot answer.

In answer to Dr. Bacon's question, the only thing I have been able to find is that there is a difference between the cells of the stratum granulosum and the theca cells. If one injects methyl blue into a normal rat, one finds that the cells of the stratum granulosum take up the stain and other cells do not, a selective action of certain cells in the body for stains of the azo-group. It indicates that there is a necrosis of cells or some change which permits these cells to unite chemically with the protein molecule.

In answer to Dr. Baer's question, in order to have a scientific paper we must rule out any error that is a possible factor in the problem. When transplanting any tissues a certain number of cells undergo necrobiosis, which may permit a certain number of ova to rupture, and such ova would not be normal ova. It must be proved that these ova are physiological before the problem is definitely settled.

In answer to Dr. Heaney, as to fertilization I can only answer that by saying I have met with a number of difficulties but have succeeded in transplanting pieces of ovary in the anterior chamber of the eye. One must ascertain the time when the ova are going to be expelled from the ovary. Ovulation takes place from 24 to 36 hours after parturition, or 30 days thereafter. I have transplanted a number of pieces of ovary into the anterior chamber of different animals, and will allow the rats to become fertilized in the normal way, and after parturition will attempt to fertilize the ova by injecting spermatozoa in normal salt into the anterior chamber of the eye.

OBSERVATIONS ON THE TECHNIQUE OF RADIUM THERAPY IN DEEP-SEATED CANCERS; ESTIMATION OF ITS CURATIVE EFFICACY

DR. HENRY SCHMITZ read a paper on the technique of radium therapy in deep-seated cancers. (See p. 177.)

DISCUSSION

DR. CHARLES S. BACON: I would like to ask Dr. Schmitz to elaborate a little more in his closing remarks on the technique he uses. In case a patient is bleeding profusely, I understand the radium is applied without any efforts to stop the bleeding. Is that correct?

DR. N. SPROAT HEANEY: I should like to ask Dr. Schmitz what his explanation is for the rapidity of exitus after operation preceding radium. Why is it so much quicker than when radium alone is given? For instance, when a patient has massive carcinoma of the cervix, if we excochleate and put in radium at the same time, why does that add to the danger of the patient? I know the answer that is given by a great many of us.

It penetrates and supposes radium, the rays would pick up the carcinoma cells that are released into the lymph stream.

DR. MARK GOLDSTINE: One of the difficult things that comes up in the treatment of carcinoma of the cervix with radium and with operation is that one cannot tell whether he has metastatic glands to deal with or not. In some of the earlier cases of carcinoma of the cervix, which look very favorable for radium treatment alone, we find metastases of the deep pelvic glands. In some of the advanced cases of carcinoma of the cervix, where panhysterectomy is done, followed by the Ries method of cleaning out the parametrium and deep pelvic glands, we do not find glands that contain carcinoma, while in the early carcinoma of the cervix, in doing the Ries operation we run into one or more glands that contain carcinoma cells. An early carcinoma of the cervix, which is regarded as a good case for radium treatment, might have these metastatic glands. If that is the case, radium will do no good. In advanced cases of carcinoma of the cervix radium will not do much good.

I would like to ask Dr. Schmitz how long, after using radium, does he wait before doing panhysterectomy? If you wait too long after radiation, it is exceedingly difficult to do panhysterectomy on account of the deep scar tissue in the pelvis.

With reference to screening out the β -ray, can you screen out all of the β -rays so that none of the secondary rays go through?

Personally, I would not want to trust a frank operative case of carcinoma of the cervix to radium treatment alone, owing to the possible involvement of the glands.

DR. N. SPROAT HEANEY: I noticed that Dr. Schmitz in his routine treatment applies the radium on 7 successive days, if I understood him rightly. I wonder if the trauma of putting radium into the cervical canal 7 times would not be comparable to the amount of trauma inflicted by an excochleation.

I can see an advantage in extensive carcinoma in changing the radium in order to radiate a different area, but Dr. Schmitz gives the reason that the tissue has a chance to recover itself from the former radiation. I think it would be hard to establish as a fact that tissue can recover in 24 hours from radiation.

DR. ARTHUR H. CURTIS: Our experience has been similar to that of Dr. Schmitz in advanced cases of carcinoma. Aside from stopping bleeding and

IX MONTEVIDEO

Through the port holes of our state-room on the palatial steamer which conveyed us from Buenos Aires to Montevideo we could see the mountain that was observed four centuries ago by the Portuguese sailor, from whose outcry, as the story goes, the mountain received its name. It appears now a small hill as compared with the City of Montevideo, to which it gives its name, but with its small fortification and

of the proud little country of Uruguay. It is strictly a modern city, with interesting architecture, parks, boulevards, and public buildings of importance and dignity. The city houses a population of sturdy, dignified, business-like people who reliably meet you face to face. Like the peoples of the other South American countries, they evince no trace of provincialism. They know their Europe and North America, and they are thoroughly cosmopolitan. This country, early in the colonization of its land, was the melting-pot of competing Portuguese, Spanish, and English, and later in its development it waged a struggle for independence against Argentine, Paraguay, and Brazil, the contenders for its attractive acres. Like all of the principal South American countries, it finally emerged from its formative struggles and quietly established its independence in the early part of the nineteenth century, when the mother country, Spain, was busy in its own reconstruction after the long Napoleonic wars.

"No, we are not Spaniards," they will say, with spirit. "We are Uruguayans." "But," the American will reply, "You certainly speak the Spanish language." "Yes, we do speak Spanish; and you, as Americans, speak English. But surely you do not acknowledge that you are English." And so the principal city, of which they are so justly proud, has grown to a metropolis of nearly five hundred thousand inhabitants.

Uruguay, in its Government, is one of the most progressive in the world. In the conduct of its business, it utilizes in the most thrifty manner its great production of live stock, harboring immense packing plants and carrying on an industry of great profit. The country was one of the first to establish the eight-hour working day and recognition of the right of men who

labor with their hands to sanitary homes and wholesome working quarters. There is a workman's compensation law.

The educational system of the country provides for and encourages a system of universal education, particularly emphasizing the primary branches. Its university system is comprehensive. Among its departments, under separate faculties, are literature, law, sociology, medicine, pharmacy, commerce, veterinary and other minor subdivisions, each with special laboratory, library, and museum adjuncts.

Uruguay proves its commercial supremacy by the fact that its financial standing is maintained at the highest mark, its unit of currency being based on the gold standard which maintains it at a parity to that of the United States. The Government controls the telegraph and postal systems, and has a rigid banking law.

This is a country of beautiful flowers. The climate is such that roses grow in profusion throughout the year. The mean temperature in the winter months is fifty-two degrees Fahrenheit, spring, sixty-four degrees, summer, seventy-one degrees, and autumn, sixty-one degrees. The mean temperature for eight years, to 1914, was, for Montevideo, sixty-one degrees Fahrenheit, the extreme maximum for that period being ninety-six degrees, and the extreme minimum, thirty-four and one-half. The average rainfall for the year, thirty-nine inches, the average fair, sunshiny days, two hundred and twenty-five per year for eight years. It is no wonder that these fortunate people present to one's view an air of contentment, that they have a spirit of optimism; and that they are industrious and prosperous.

Visit their country as you would visit France or Italy—to enjoy the perfection of climate and the charm of companionship with a cultured people. Go to their sea-ports, attend their operas in their palatial opera houses, learn of their business methods, and in your sojourn you will see many things that will give you food for enjoyment for the long winter evenings of your own wonderful land.

No one can visit our southern continent, if he travels in comfort, and view the mountains, the valleys, the rivers, and the plains of its vast area, know and converse and live with its fascinating people, and experience the thrill of its stimulating and agreeable climate, and not say to himself: "I shall go again."

many sections were made and stained. We spent 2 months in making sections of the pelvic contents, and not a single section was found that did not contain cancer cells. However, all the cells were degenerated, separated in small areolas surrounded by dense masses of connective tissue.

I believe these two instances explain the reason why we should not operate after we have arrested the cancer with radium. Such patients fare much better without an unnecessary and dangerous operation.

As to how long a time should elapse in clearly operable cases between the preoperative radium application and the operation, and, if the operation is done late, whether the dense scar tissue interferes with the successful performance of the operation.

The formation of dense scar tissue after radium application is the result of overdosing. If we are careful in gauging the dosage, and do not give more than 3000 to 4000 milligram hours of radium element, we will not have heavy scar tissue formation. When we use 8, 9, and 10 thousand milligram hours of radium element we cause the formation of an enormous amount of scar tissue.

The time interval observed between radium application and operation is usually 8 to 10 days. Should we find a great deal of difficulty in arresting bleeding on account of scar tissue, we clamp the tissue and do not bother about ligating a single vessel. The forceps are left *in situ* for 36 hours when they are loosened one or two notches. Twelve hours afterward, if removed and two or three operations are placed in the operation, are tied as soon as the forceps are removed. Drainage is established and maintained through the vagina.

Concerning the screening of the primary and secondary β -rays we are convinced that a brass screen 2 millimeters thick will arrest almost all the primary β -rays, while the rubber filter will absorb the secondary β -rays. Injury might be done to the healthy vaginal mucosa. But if the radium is placed in the uterus, where one and a half centimeters of tissue intervene between the radium and the vaginal wall, all the β -rays become absorbed and cannot do any harm. There is nothing gained by cauterizing the cervical canal. On the contrary,

experience with chemotherapy used in conjunction with radium. I have used almost every substance known and recommended for the treatment of cancer

but without observing any apparent benefit. I believe that radium has also secondarily biologic properties. The rays split up cancer cells. The split products are absorbed, giving rise to a formation of protective ferments or substances which very well antagonize progress of the cancer disease. Any substance, be it a chemo-biological substance or a tumor extract, etc., that increases the formation of these protective ferments would be a valuable adjunct in the treatment of cancer.

Whether the trauma, caused by inserting the radium into the cervical canal, is not as injurious as excochleation. I think that a careful dilation can be performed without causing much trauma, and we rarely ever have to dilate the cervical canal again at subsequent radium insertions.

It has been stated that as long as we do not know the average expectancy of life of a patient suffering from carcinoma and not subjected to treatment, it is difficult to determine whether a patient is deriving any temporary benefit from treatment. I believe the expectancy of life has been thoroughly studied in a great number of cases. You will find in Veit's *Handbook of Gynecology* the statement that from the time cervical cancer is recognized the duration of life is 2 years. For corporeal cancer it is about 3 years.

There is no doubt that some cancers react more slowly to radium than others. It is impossible for any one to state from microscopic examination whether a particular tissue is more suitable for the rays than another. Apparently such differences are not due to the histologic character of the cancer. Similar disturbances.

Massive X-rays have been found to be a desirable and valuable adjunct to radiumtherapy. We have no doubt with the

1 patient shall have from 8 to 12 treatments suprapubically and 6 over the sacrum and buttocks. To each one of these fields of 12 to 20 we apply 50 millimeter minutes, the filter being .5 millimeters of aluminum, the focal distance 7 inches, and the spark gap from 8 to 9 inches.

As soon as apparatus are built that can produce 180 to 200 thousand volts of current, and tubes made that will stand such a load, Roentgen treatment will be much more efficacious as the intensity of the rays from such a tube would be as great as that of the γ -rays of radioactive substances.

application should be made where difficulty is experienced in securing suitable accommodations.

SPECIAL FEATURES

On Tuesday, Wednesday, Thursday, and Friday afternoons at 2 o'clock in the ballroom of the Windsor Hotel will be presented a series of special clinical demonstrations presided over by Montreal surgeons and participated in by a number of the visiting surgeons. Among the subjects to be presented at these demonstrations are: Circulation in the kidney, circulation in the heart, circulation in the normal and gravid uterus, rhythmic contraction in the gall-bladder and biliary ducts, war splints and treatment of fractures of

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gall-

bladder, and pylorus, chest surgery and plastic surgery of the face.

Monday will be devoted to a consideration of the problems of hospital standardization with sessions both morning and afternoon in the ballroom of the Windsor Hotel. A detailed program relating to this particular phase of the work of the College will be published in a later issue.

The annual business meeting of the American College of Surgeons and the Clinical Congress will be held on Thursday afternoon at 4 o'clock in the ballroom of the Windsor Hotel.

The eighth convocation of the American College of Surgeons will be held on Friday evening in St. James Methodist Church at which time fellowship in the College will be conferred upon a large group of American and Canadian surgeons.

LIMITED ATTENDANCE—ADVANCE REGISTRATION

So popular have these annual clinical meetings become that it has been found necessary in recent years to adopt the plan of limiting the attendance, requiring registration in advance on the part of those who expect to attend. A survey of the amphitheatres, lecture rooms, and laboratories in the several hospitals and medical schools as to their capacity for accommodating visitors has been made and the limit of attendance based thereon. This plan insures accommodations at the clinics for all who register in advance. It is quite evident at this date, judging from the total number of registrations already received, that the limit of attendance will be reached in advance of the meeting. When the limit of attendance has been reached through advance registration, no further registrations will be accepted, which will

be disappointing to many surgeons who have attended previous meetings, though the necessity for adopting such a plan will be apparent to all.

CLINIC TICKETS

Attendance at all clinics and demonstrations is controlled by means of special clinic tickets, the number of tickets issued for any clinic or demonstration being limited to the capacity of the room in which the clinic or demonstration is to be given. As a general rule, one may secure two tickets for each day, one for a morning and one for an afternoon clinic, but for certain clinics, where the accommodations are limited and the demand for tickets is heavy, the rule will be that a visitor may have but one ticket for such clinic during the week. The use of these tickets has proven an efficient means of providing for the distribution of visitors among the several clinics and insures against overcrowding.

Clinic tickets will be issued at headquarters each morning at 8 o'clock for the clinics and demonstrations to be given that day, a complete schedule of the day's clinics having been posted on the bulletin boards at headquarters on the afternoon of the preceding day. After the program has been posted, reservations for clinic tickets for the next day's clinics may be filed,

announcements of the evening session, business meetings, etc.

REGISTRATION FEE

A registration fee is required of each surgeon attending the annual clinical meeting, the receipts from registration fees providing the funds with which to meet the expenses of preparing for and conducting such meetings, so that no financial burden is imposed upon the members of the profession in the city entertaining the Congress.

A formal receipt for the registration fee is issued to each surgeon registering in advance, which receipt is to be exchanged for a general admission card at headquarters upon his arrival in Montreal. This card, which is non-transferable, must be presented to secure clinic tickets and admission to the evening meetings. Headquarters at the Windsor Hotel will be open for registration on Monday, October 11. The clinical program for Tuesday will be bulletined at headquarters on Monday afternoon, and tickets for Tuesday's clinics will be issued as visiting surgeons register.



M.C. Gorgas

CONNECTICUT

13th " John B. Blake, Boston
 15th " Augustus W. Buck, Fall River

MAINE

EXECUTIVE COMMITTEE

Chairman, John B. Blake, Boston

Term expiring 1921

Senatorial, John L. Loveland, Middletown
 1st District, Wilbert E. McClellan, Hartford
 3rd " Edward W. Smith, Meriden
 5th " Augustin A. Crane, Waterbury

MASSACHUSETTS

EXECUTIVE COMMITTEE

Chairman, Frederic J. Cotton, Boston
 Secretary, Charles E. Dexter, Boston

NEW HAMPSHIRE

VERMONT

EXECUTIVE COMMITTEE

Chairman, John B. Wheeler, Burlington
 Secretary, William W. Townsend, Burlington
 Correspondence, John M. Allan, St. Johnsbury

9th " Frederic J. Cotton, Boston
 11th " Fred B. Lund, Boston

Term expiring 1921

Senatorial, William W. Townsend, Burlington
 1st District, John B. Wheeler, Burlington

STATE CLINICAL SECTIONS ALREADY ORGANIZED

The following states have now organized clinical sections:

North Carolina	Utah	Wisconsin
Louisiana	Colorado	Michigan
Texas	Missouri	New York
Arizona	Tennessee	Rhode Island
California	Kentucky	Connecticut
Oregon	Ohio	Massachusetts
Washington	Indiana	Maine
Idaho	Pennsylvania	New Hampshire
Montana	Illinois	Vermont

It is important that the Executive Committees of the states which have been organized shall meet at an early date for the purpose of selecting a date and formulating tentative plans for their first sectional meeting. We are endeavoring to arrange these meetings in various parts of the country in such a way as to enable the representatives from the central office who will attend them to visit more than one state in a district on one

trip. Therefore, we are asking the Executive Committees to notify the central office as soon as a tentative date for the first sectional meeting has been decided upon in order that the plans of other states may be formulated accordingly.

ANNUAL SESSION OF THE CLINICAL CONGRESS

The tenth annual session of the Clinical Congress of the American College of Surgeons will be held at the Windsor Hotel, Montreal, during the week of October eleventh of this year. It is proposed to hold a meeting of all Executive Committees and Congressional Representatives of the various states and provinces at some time during that week. A formal notice of the time and place of this meeting will be sent in advance to all state representatives. With this plan in view, it is hoped that before September first we will be able to organize formally the remaining states and provinces.

The magnitude of his success can only be appreciated when one realizes that the Medical Corps, under Surgeon General Gorgas, was built up from a peace-time organization of less than four hundred officers to a war-time expansion at the time of General Gorgas' retirement of more than thirty thousand officers and two hundred thousand enlisted men—a Corps far in excess in numbers and responsibility of any other three Corps in the United States Army.

During the latter years of General Gorgas' life, in his official capacity, he was frequently called upon to give information and advice to his superior officers and the military committees of Congress. Here this man accomplished some of his most important work. No witness received closer attention than did he, and no words were more implicitly believed or carried greater weight before the Congressional Committees than those spoken by General Gorgas. In the early days of the war, it was his frank testimony before the House Committee on Military Affairs that established his reputation for honesty and that turned the tide of destructive criticism which had been launched against the Medical Corps for its treatment of the soldiers in some of the partially constructed southern camps. "Yes," he admitted, "we have, under the pressure of emergency and due to inexperience in handling large numbers of men, made mistakes; but," he confidently added, "we will promise not to make the same mistakes a second time." This frank acknowledgment of error on the part of his own Corps fairly took the breath of the experienced statesmen, and forthwith General Gorgas' prestige was established in Congress, and, incidentally, he had cleared up an embarrassing situation for the Administration.

One could multiply instances like those portrayed in the foregoing in which General Gorgas, going quietly about the routine of his work, aided in unraveling difficulties that in the light of his experienced mind simply required a statement of facts.

In contemplating the life of this man, the standard of his life and his reputation; and the basis of that fame is his work on an enduring principle. This is the great picture of his life's work: painted on a canvas of a great personality and framed in traits of character of fascinating charm.

Franklin H. Martin

BIOGRAPHICAL

GENERAL Gorgas has been affectionately called "physician to the world," by reason of the immense benefits his labors have conferred upon mankind, according to the *New York Times*. His birthplace was Mobile, Ala., a state of which his maternal grandfather, Quayle, had been Governor. He was born in 1854, the son of William Gorgas, a West Point graduate who fought for the Confederacy as a Brigadier General and after the war became President of the University of the South, at Sewanee, Tenn.

It was at this institution that the great sanitarian received his college education before coming North in the seventies to study medicine in New York at Bellevue

ARCHIVES OF SURGERY

THE first number of this long anticipated addition to the literature of surgery is before us. The editorial announcement which appears on the initial page, signed by its senior editor, is herewith reproduced:

For a number of years the trustees of the American Medical Association have purposed the establishment of an *Archives of Surgery* similar in character and scope to the *Archives of Internal Medicine*, the *American Journal of Diseases of Children*, the *Archives of Neurology and Psychiatry*, and other comparable publications. Delays of various kinds have arisen, among others those resulting from the war, which have prevented the fulfillment of this purpose. The fact, too, that there were already in this country two great journals of surgery, the *Annals of Surgery* and *SURGERY, GYNECOLOGY AND OBSTETRICS*, has made this delay of less consequence.

The *Journal of the American Medical Association* has the largest circulation of any medical journal in the world, and represents the activities of the American medical profession. The *Journal*, therefore, must carry contributions which will cover all the different fields of medicine. Contributions to its surgical section are so numerous as to make it difficult to publish them all in the *Journal*, especially since many of these contributions are too technical to be of interest to the entire profession.

The trustees in establishing the *Archives of Surgery* have wisely determined that it shall not enter into competition with the journals of surgery now in existence. They believe that it should, besides lessening the burden of the *Journal's* publication, establish a sphere of its own. They believe, and again rightly, that another journal of clinical surgery is not warranted, and the task of the editor, Dr. Dean Lewis, and of the editorial board is to develop an organ which will in no way interfere with the justly earned successes of the existing publications, and yet establish a journal which will be creditable to the great organization that it represents, and sufficiently useful to the profession to warrant its entering the field.

In the growing period of surgery, it was not possible to train surgeons in the true sense. Only a few men had the opportunity to work as assistants to experienced surgeons. This is no longer the case.

In the future, the surgeon will serve an apprenticeship; and three-year courses of instruction in which such training can be given are now being offered for those graduates in medicine who have served their hospital internship. It is the hope of the editorial board that the *Archives of Surgery* may be one of the organs of expression in this growing field of surgical education, and that it may furnish an opportunity for the publication of original articles pertaining to research and investigation in those subjects which lay the foundation for sound surgical progress. American surgery has developed unevenly. Many competent observers are of the opinion that clinical and operative surgery and surgical technique have advanced faster than the growth of knowledge with regard to the fundamental but less attractive branches would warrant. It may be said that the philosophy of surgery has lagged, and operations based on unsupported opinions as to their wisdom or their necessity are too frequently advocated.

The *Archives of Surgery* will attempt at least to enlarge the surgical horizon and assist in establishing surgery on a sounder basis. Unpleasant as it may be, the editor will not hesitate to comment editorially on the papers published in its columns in order that both sides of a moot question may be considered. The reader will be given an opportunity to peruse surgical fads and fancies if such be presented, but if the subject matter introduces questionable material it will not be allowed to go unchallenged.

I wish, at this time, to express my indebtedness to the *Annals of Surgery* and to *SURGERY, GYNECOLOGY AND OBSTETRICS*, and especially to their distinguished editors. The scientific pages of the *Annals* have ever been to me a source of surgical wisdom and inspiration. *SURGERY, GYNECOLOGY AND OBSTETRICS*, combined with its abstract department, is one of the most extraordinary achievements in the history of surgery. Its editor, by his vision, knowledge and courage, has placed the surgical profession in his debt.

WILLIAM J. MAYO.

There are four points in this editorial, announcing the policy of the American Medical Association in undertaking this new publication, which particularly commend them-

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SOUTH AMERICAN SURGEONS

A TRIP IN BEHALF OF THE AMERICAN COLLEGE OF SURGEONS BY DR WILLIAM J. MAYO,
PRESIDENT, AND DR. FRANKLIN H. MARTIN, SECRETARY-GENERAL—CONCLUDED

By FRANKLIN H. MARTIN, M D. F.A.C.S.

I. WHEN SHOULD ONE VISIT SOUTH AMERICA?

WHEN should a resident of the United States make a vacation trip to South America?

This will depend upon the object of the journey and the tastes of the traveler, as well as his desire to recreate in a new world. The full thrill of a visit to South America, from a climatic standpoint, can be obtained by leaving New York in January or February, after one has experienced some of the severities of zero weather in our northern states. A most satisfying contrast is apparent between New York weather in those months as compared with that which is prevalent three days afterward in the gulf stream off Florida and the Bahamas, followed by the approach to Jamaica and Panama, with their delightful tropical atmosphere and a summer sea. In January and February the heat in the Caribbean Sea and the Pacific Ocean is not so intense as that which will be found later, when the sun is well back from its excursion to the southern zone. Therefore, the dreaded heat of the Equator is not to be feared in these early months, and when the perpendicular rays of the sun are met, the Humboldt Current of the southern zone cools the sea and fans the atmosphere. And when one reaches Peru, Chile, Argentine, and Uruguay in February and March, while it is the summer of these countries, the atmosphere is much like San Diego or Pasadena during the same months, the temperature varying from sixty-five to eighty-five degrees Fahrenheit, with cool nights, and comfortable days if one is not exposed to the direct rays of the sun. At this time of the year, the society people are residing in the country. But, unlike the custom in our country, the summer homes of these people are in rather close proximity to their winter homes—in the beautiful suburbs and nearby towns or country estates. However, at this season one cannot enjoy the attractive social features of winter life, with the operas, the theaters, the gaieties associated with the season's races, and the general winter life of the people in their city homes. For this reason the society devotee, the seeker of the gaieties of these attractive, cosmopolitan centers, the one wishing to study the people in the making of their laws, in their normal social intercourse, and in

their educational institutions should go to South America during their fall, winter, and early spring, or our May, June, July, August, September, October, and November.

The surgeon and physician who desires a vacation and who will be satisfied to visit the hospitals and the medical institutions of South America at a time corresponding to our June, July, and August, will be more than content with the bird's eye view of their institutions, with the novelty of travel, with the external beauty of the different countries, and with the consciousness that he is escaping the severe winter of our northern climate, and enjoying an ideal summer atmosphere in the most fascinating environments.

To summarize: For charm of change from severe winter to most desirable summer, for a long sea voyage without heat or storm, for a view of the continent in its summer garb, for a visit to cities divested of the members of society but with much remaining to interest and please, leave the northern continent in January or February. For a view of the social life and of the society people living a normal and active life in the cities and with disregard of the charm of change in climate, visit South America during their winter, our summer.

II. LOOK AT THE MAP¹

How few realize that the west coast of South America is on a line with the eastern coast of the United States! A plumb bob dropped from New York would pass to the east of Cuba, through the Panama Canal, and would hang on a perpendicular line in the harbor of Valparaiso. Realize that with one's three weeks' cruise from New York to Valparaiso, directly south, there is not the usual distraction of changing one's watch. Realize that the western coast of the United States is nearly four thousand miles west of the most westerly point of South America and the Panama Canal. Realize that in traveling from San Francisco to Valparaiso or Lima one would change his timepiece one hour on three different occasions, and that the eastern coast of Brazil is fully as much farther east and more nearly approaches the longitude of England than of New York.

¹See map of South America on page 211

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GENITO-URINARY SURGERY

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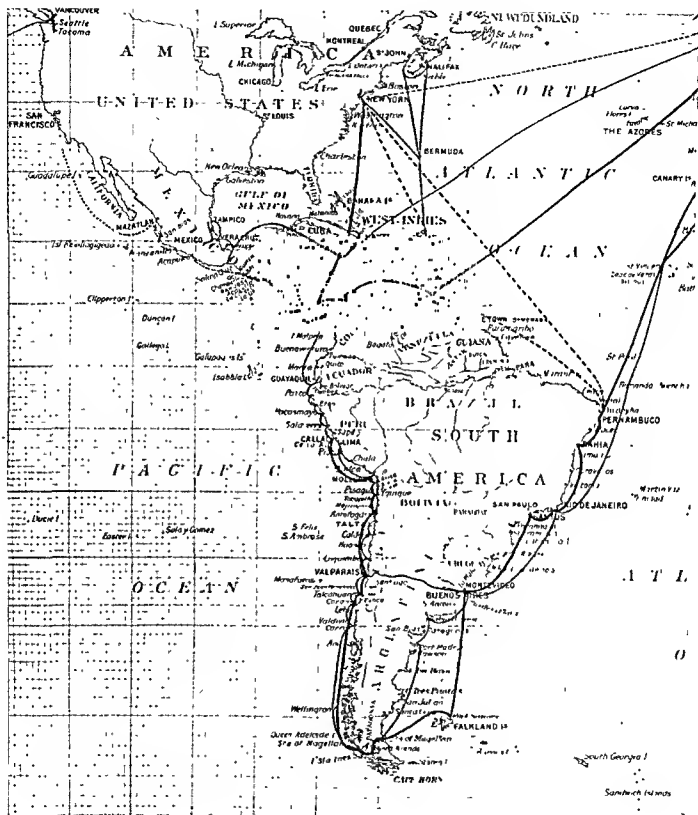
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The University

Pacific into the arms of the foot-hills of the Andes forty miles away. For three hundred years this city was the metropolis of the southern continent, and, according to a quotation, it was "the center of vice-regal court whose splendor and gaiety vied with that of royalty itself."

The Universidad de San Marcos has among its several departments a well-conducted, modern college of medicine, with a strong faculty and an equipment equal to the best in any country, and a well-worked-out, seven-year curriculum.

Finally, the writer of the article from which I have purloined so liberally says in his summary, "The City of the Kings has passed and now Lima is now an accomplished fact." He tells us that modernizing influences have been somewhat slow in coming to this secluded country of the western coast; but now, with many of its resources ready for more full development, and with transporta-

tion now open through the Parnassus Express
speeding-up of this country's progress.

V. CITIZENSHIP

That long ribbon of a five hundred miles long and the Pacific Ocean tropics through the South of material for the bird's eye view of the traveler encompasses interest, and in that months of play ready dwellers in undeveloped present conditions. The area of the population is indicates that

ment of the costal elements is the cause of the vast majority of vertebral variations. In his opinion there is more than merely an increase in size of a costal element of the vertebra in cervical ribs, since a cartilage is found frequently shooting out from the manubrium to meet it. He concludes that the variations occur in two ways: (1) by the irregular development of the costal elements at or near the ends of the regions of the spine, and (2) by irregular segmentation as a result of which there are more or fewer vertebrae than normal.

Leboucq considers the area between the second and third cervical vertebrae a critical point and believes the third vertebra is exposed to more modification than the others. Such modification may result in increased segmentation or assimilation of the third vertebra. When the third vertebra is assimilated only 6 cervical vertebrae remain, and in some animals, the lamantin, this number is normal. In Leboucq's two cases of 8 cervical vertebrae the extra vertebra was the third.

Anomalies of the number of vertebrae are frequently associated with cervical ribs or rudimentary thoracic ribs.

In a case reported by Low there were 25 presacral vertebrae, a rudimentary first rib, and 13 pairs of ribs. Low believes the extra vertebra was the first sacral and that, as is true in most cases of 13 ribs, the shifting of the pelvis forward was arrested. Dwight reports a case and quotes one reported by Gruber in which, with cervical ribs, there was absence of one dorsal vertebra. Bellamy reported a unique case in which there were 6 lumbar vertebrae and a rudimentary first rib. In Lane's opinion the supernumerary vertebra bearing rudimentary ribs was the eighth cervical and not a thoracic vertebra. In a case reported by Meyer in which there were 8 cervical vertebrae a cervical rib was found on one side only.

RIBS

Each rib is represented at the beginning of the second month of foetal life by a pyramidal mass of condensed mesenchyme which projects from the posterior one-third of its segment.

to a definite curve is effected by a lateral addition and a medial subtraction of cartilage. The cell and interstitial growth take place medially.

Periosteum appears at the seventh week. In the eighth week osteoblasts are numerous and cal-

cification and bone form like a gutter on the lateral one-third of the rib (Geddes). Leboucq was the first to postulate the existence of two morphological units in the development of a rib, an anterior and a posterior unit, the anterior arising from the sternum. Embryologically each cervical vertebra has a costal process which, with the transverse process, forms the costo-transverse foramen. This costal process may develop abnormally into a cervical rib (Henderson). Leboucq stated that in most cervical vertebrae the ventral limb of the transverse process is ossified by ingrowth at one end from the radix and on the other by ingrowth from the tip of the transverse process. In the seventh cervical vertebra (frequently in the sixth, occasionally in the fifth, and rarely in the fourth) a separate center of ossification for the costal element may develop between the second and the fifth months. While this costal element may remain free as a cervical rib, it usually becomes fused with the osseous projections from the radix and the transverse process (Kiebel and Moll).

Wiedersheim states that the thirteenth rib, which always appears in the adult, is a vestigial

with ribs and considers this a persistence of the foetal thirteenth rib. Many primates, among which are the orang, gibbon, chimpanzee, and gorilla, have 13 or 14 ribs normally.

Tredgold states that there is not only a reduction in the total number of ribs as we rise in the animal scale, but a coincident and proportional reduction in the number of sternal ribs. The eighth becomes a costal and not a sternal rib and there is a shortening of the thoracic cavity from below.

According to Rosenberg, a progressive change is shown in man by the absorption usually of cervical ribs with the lower thoracic ribs, and a retrogressive change is shown by the presence of additional ribs. A variation of the opposite nature also occurs frequently.

CERVICAL RIBS

Most cervical ribs are short and incomplete. The nearer they approach complete disappearance the more they approach the normal. In this they are in contrast to the rudimentary first thoracic ribs which usually extend to the nerve plexus and are rarely short and process-like. In the first rib the variation from normal becomes greater as the rib approaches obliteration while the cervical rib varies from the normal more

the first humble little wooden church ever built in Chile was erected by Valdivia's men. Independent of its handsome architectural features, this religious edifice is of great interest because of the historic and intrinsic value of some of the treasures it contains. Among these may be mentioned the monstrance, altar ornaments, and sanctu-

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sides of which stand marble columns surmounted by

a great pear tree with remarkable skill, which once belonged to the monastery of the Jesuits, whence it was removed in 1766, a crystal chandelier, once hung in the national library, which lighted the night sessions of the first National Congress of independent Chile, and the Americas,

place of
and some
structure. On the north side of the plaza are to be found the central post office and the historic buildings of the intendencia and municipal offices. On the south and east sides of the square are the Portal Fernandez Concha and the Portal MacClure, buildings whose lower stories are constructed in the form of arcades in which are numerous retail stores and shops as well as stalls where are to be found potted plants and cut flowers and some of the most delicious fruits grown in the Americas.

In addition to the open squares and plazas, Santiago boasts of three handsome public parks, viz., the Parque Cousino, the Parque Forestal, and the Cerro Santa Lucia. Handsome shade trees, beautiful driveways, beds of gorgeous flowers, fountains, statues, etc., grace the first two mentioned, but other metropolitan cities have similar playgrounds for their people.

But the culmination of the beauty of this unusual city is the island mountain that rises as a dignified landmark and that may be seen from any vantage point. This same writer, in his appreciation of this, says:

"Santa Lucia, however, that historic hill once known as 'Huelen,' is unique. No city of modern time, as far as the writer knows, has anything just like it. It is the culmination of things beautiful and interesting in the Chilean capital, and must needs be seen to be appreciated. No written description can adequately present its artistic beauty, but the following may serve to give the reader some little idea of its charm.

It was Don Benjamin Vicuña MacKenna, one of Santiago's greatest benefactors, who was responsible for the transformation of the rugged mass of projecting basaltic rock, once Valdivia's fort and subsequently for many years used as a sort of potter's field and burying ground for non-Catholics, malefactors, etc., into the delectable pleasure resort of today. The existence of this isolated hill in the center of a smooth and level plain has been something of a puzzle to geologists, for the character of the rock is entirely different from that of the mountains of the region and no other basaltic strata are said to have been found in the immediate vicinity. Whatever may have been its origin, Vicuña MacKenna saw the possibility of transforming the hill into a beauty spot in comparison with which the famed Hanging Gardens of Babylon, built by Nebuchadnezzar for the gratification of his homesick queen, dwindle into insignificance. It is located in the northeastern section of the city, near the head of the famed Avenida de las Delicias, the splendid boulevard that

fountain whose constantly falling showers on festive occasions are lighted by an electric device beneath, giving an effect of falling drops and sprays of light that is strikingly beautiful.

Leading from the main entrance a circling and gradually ascending carriage driveway skirts along a succession of artistic terraces, stone stairways, rustic bridges, and occasional kiosks, until it stops about halfway to the top in a wide terrace. Here is located a spacious, open pavilion, provided with comfortable seats for loungers and a number of tables and chairs where the visitor may refresh himself with cooling drinks and delicious dishes prepared by the café. During the pleasant evenings an orchestra provides music for the entertainment of the guests and for the benefit of those who care to dance. Not far from this terrace, a little higher up on the hill, stands the handsome mausoleum of Don Benjamin Vicuña MacKenna in which rest the remains of the designer and donor of this exquisite pleasure resort, while just before reaching the terrace on one side of the driveway may be seen a small, heavy, wooden door apparently built into a solid cliff of rock. It leads to a most interesting subterranean chamber—the seismographical observatory of Chile.

From the terrace the summit is reached by beautifully shaded paths which wind gradually upward between dark masses of trees and banks of gorgeous blossoms and flowering shrubs, with here and there cool grottoes and shady nooks provided with benches, along small cliffs from which trickle little streams of water and miniature cascades, side paths sometimes leading to small terraces from which views of the city may be had, until finally the visitor reaches the circular kiosk at the very top. Here, at an elevation of a little less than 400 feet, he secures a panoramic view that is superb. Around the base of this pedestal clusters the city with its spires, steeples, turrets, domes, and towers, its open squares and straight streets, while beyond it to the east and northeast rise the hoary

toward the south the level plain extends as far as the eye can reach, a succession of green fields, regularly laid out farms, and wide meadows on which graze great herds of cattle and droves of horses, a picture of peace and plenty that adds another element to complete the charming panorama.

And so this city, scanned by the hurried traveler, leaves an impression of cleanness, unusual natural beauty, and a serious, efficient people. The natural beauty has been accentuated by art in its boulevards, in its patios, and in its architectural structures. Its people, in the

to cervical ribs, it is not so necessary to classify the rib as to recognize the symptoms and rule out other possible causes. Symptoms produced by rudimentary first thoracic ribs have been reported by Outland, Russell, Hoosle, Clere, Didier, and Bobrie.

The difficulty in diagnosing the rudimentary rib may be increased by the intercalation or excalation of a vertebra. Unless the roentgenogram includes all the vertebrae a rudimentary first rib is usually believed to be a cervical rib.

A normal first thoracic rib is flat in only one plane. An abnormal first rib may be bent at its axis. According to Jones, this twist is common in cervical ribs. The first rib may be turned down and bent at the point crossed by the brachial plexus. Ventrally from this point it is sometimes reduced wholly or partially to a membranous strand or is entirely absent. In a further stage the first rib is represented only by its proximal part which articulates with the second rib or is fused

ment from two portions this deficiency may occur anywhere or for any distance along the rib.

Rudimentary first thoracic ribs nearly always extend to the region of the brachial plexus. Such ribs approach the normal more nearly than the shorter stump-like processes. Wood Jones suggests that the reduction is due to pressure by the nerve and that in such cases there is a distal displacement of the brachial plexus in respect to the constituent nerve cords.

Anomalies associated with rudimentary first thoracic ribs are frequent. Low describes a case in which there were 13 pairs of ribs with 25 presacral vertebrae. Leboucq found the division of the manubrium and sternum below the second rib in 2 cases. In the gibbon the separation of the manubrium at the third rib is normal but has been found only once in man. Hertslet and Keith state that rudimentary first ribs are characteristic of the Magyars.

In a horse, Bradley found a fibrous band extending to the sternum. Struthers discovered a similar band in a three-toed sloth and Adolphi another in a dog.

A "bicipital rib" is the fusion of 2 ribs and not the bifurcation of a rib into 2 heads. This fusion may be between a cervical and a first thoracic rib or between the first and second

"bicipital rib" is formed by the fusion of a cervical rib and the first thoracic with occasional variations and does not constitute an adequate basis for a separate classification.

PATHOGENESIS

In order to give rise to symptoms a cervical rib must be of fairly large size so that it will produce pressure on the nerve plexus or the subclavian artery. Borchardt states that only 5 or 10 per cent of cervical ribs are associated with, or the cause of, symptoms.

There is no fully satisfactory explanation why symptoms occur in only a part of the cases. When they do occur they usually begin in young adult life and are more common in women. Thorburn and Morley have recently stated that symptoms may be caused also by rudimentary first thoracic and even normal first thoracic ribs. Stopford and Telford report several cases in which the symptoms were relieved by the resection of an apparently normal first rib and Murphy reports a case in which complete recovery followed the removal of a normal first rib.

The bony prominence against the nerves or blood vessels is in a position to cause symptoms merely by mechanical pressure upon the nerves. In the absence of a bony rib a fibrous band extending from the rudimentary rib may act in the same manner. The upper edge of the rib may be sharply beveled and the nerve roots may be stretched over it. The greater frequency of symptoms on the right side is explained by the greater use of the right arm. Branches from the first and second thoracic nerves may not be sufficiently large to stunt the rib, but with some exciting factor, such as trauma, may produce symptoms later (Wood Jones). This, however, does not explain the onset in adult life and the greater frequency in women. After the development of the ribs, ossification, a decrease in

ossification of cervical ribs which occurs in early adult life is responsible for the onset of the symptoms. Direct trauma due to carrying objects, such as a rifle, on the shoulder, forceful motions of the arms, or even slight trauma where tension is already present (such as may result from the motion of the thorax with respiration) may be the exciting factor. In other cases trauma may be

(Thorburn).

side up. It is a mystery that this road can ever be kept open at all. Much of the way the track is a mere thread on the side of a mountain whose structure is such that it seems as though the slightest jar might precipitate an avalanche; just loose stones held insecurely together by soft dust and sand; then will come great masses of rock, looking as though only the eternities would dislodge them; and so it goes, constant variation.

Owing to the serious difficulties on the road, our train crept along more and more slowly and we lost more and

rather monotonous country and grew hot and tired, but never downhearted, there was so much to see and enjoy.

We had been told that we might expect to reach Buenos

then after submitting to the operations of the omnipresent photographers, we were put into Dr. Vegas' car and driven to the Plaza Hotel. This is a very modern, very up-to-date establishment, where delightful rooms were awaiting us and where we were only too glad to sink down and rest.

VIII. BUENOS AIRES

medicinal baths. By digging only two or three feet below the earth surface, water gushes forth containing various medicinal properties and varying in temperature from seventy-nine to one hundred and twelve degrees. The little town prides itself on its quite pretentious hotel, and as many as twenty thousand guests per annum visit the resort. But here, less than a week ago, occurred a bad slide which carried the road and a portion of the hotel into the river, and at which time several of the guests were drowned. Now, in spite of desperate efforts, the road had not been sufficiently repaired to make it safe for passengers; so we all disembarked, leaving our worldly goods in the cars which were pushed over a rickety bridge, while we followed on foot, single file. It was rather a thrilling sensation to stand out in the open near this little South American town—the stillness of the night, the mountains all about us, the Southern Cross shining over our heads, the moonlight falling on the glistening snow of Aconcagua towering in the distance, all combined to paint a never-to-be-forgotten picture.

Presently we climbed once more into our train and crept on our way, always hugging the river which at times seemed only a foot or two from the tracks, and which, in places, was, we were told, forty-five kilometers deep. It was midnight when we finally pulled into Mendoza, and bag and baggage left the Trans-Andean Railroad and

No matter where or in what manner one has traveled, he must be agreeably surprised by the charm and beauty of the metropolis of South America—a cosmopolitan city, possessing beautiful boulevards, parks, palatial buildings, continental theaters, museums, libraries, art galleries, universities, clubs, and beautiful suburbs in which resides its summer population; but beyond this it has an intangible fascination that one cannot describe, that holds one in thralldom as do some of the famous capitals of Europe.

This city, although founded in about 1530, was not permanently settled until the latter part of the sixteenth century. Its population is now more than a million and a half, and it is so situated that there is ample room for expansion. Its people are independent and proud, and they have a charming manner and a friendliness that makes one admire them, warm to them, and that creates a desire to live among them and to absorb their spirit. While they are a serious people, they possess the desire for pleasure and social intercourse, as testified by their clubs, their pleasure parks, their racetracks, their theaters, and their opera houses. They are scrupulous in the care of their people, as is evidenced by their system of hospitals, which are not excelled by those of any city of the world; also in their educational system, including the early care of their children, their later, higher education, and their well-equipped and well-conducted universities and professional schools of law, medicine, engineering, and theology.

Weeks may be occupied here, in the most luxurious surroundings, in enjoying and becoming acquainted with these great neighbors of ours in the southern portion of this, our twin continent, where the weather is never colder than fifty-one degrees Fahrenheit, nor warmer than eighty degrees.

The Republic of Argentina is about one-third the size of the United States. It became an independent country in 1810, and its Constitution is patterned after the Constitution of the United States.

on record. Somewhere there is an "S" in the road, and then it goes on straight again for considerably over four hundred miles. Two fine dining cars, attached to our train, were ready for action upon our arrival, but most of us preferred our sleepers, finding from five thirty A.M. to twelve thirty A.M. quite long enough for one day.

resembling vast stretches of our own western prairies. Sometimes it is barren, with great bunches of pampas grass nodding at one; sometimes there are immense corn and wheat fields; and over and over again we saw herds and

factors affecting vascular relations are the action of the scalenes, especially the anticus, the descent of the diaphragm, and the descent of the heart in inspiration.

Streissler states that if the artery is pressed upon by the rib the radial pulse will diminish during inspiration and the blood pressure will be lessened.

Todd (1912) concluded that it is necessary to consider descent of the clavicle after birth in order to explain the mechanical pressure caused by the first rib on the lowest brachial trunk. He believes two factors are at work, one acting at each end of the bone without reference to the other. The factor producing descent of the inner end of the clavicle is the tilting downward of the anterior end of the first rib. This is due largely to tonic contraction of the recti abdominis muscles. The descent of the inner end of the clavicle is greater in men than in women because of the greater tonicity of their muscles. The descent of the shoulder and outer end of the clavicle is modified by the development of the surrounding muscles and is greater in women than in men. In consequence, pressure is most apt to develop on the lowest cord of the plexus in women at the beginning of adult age when the greatest descent has occurred. It was noted also that respiratory excursion is greater in women and in the body when in a recumbent position.

The scalenus bundle may play a part in the pressure phenomenon. The fact that the vein is rarely involved may be due partly to lack of fixation as it lies in front of the anticus. Murphy believed that both nerve and vascular symptoms are due to compression by the growing cervical rib and the scalenus anticus. The scalenus anticus normally fixes the artery anteriorly. The lowest trunk of the brachial plexus, however, is also fixed in proportion to the development of the costopleural ligament and the scalenus minimus muscle. The scalenus minimus passes between the nerve bundles and the artery. In a series of dissections the writer has found the band and ligament quite constantly and in some cases markedly developed and closely surrounding the nerve cords.

In some cases nerve disturbances may be due entirely to circulatory changes. Changes due to retraction of the dome by healed tuberculosis, pleuritis, pressure by exudate, tumor, or other conditions may affect the nerves or blood vessels. Narrowing of the space around the cervical rib, as in cases of periostitis, exostosis, or other pathologic processes, or around the clavicle in cases of fracture of the clavicle, may occur as in a case described by Streissler in which the callus pressed

the nerves against the cervical rib. Any one of the causes of toxic neuritis, such as diphtheria, arthritis, and arteriosclerosis, may produce symptoms. Symptoms may be due also to local involvement of the subclavian. A patient seen by von Bergmann developed symptoms after paralysis following diphtheria and on examination a cervical rib was found. Todd in 1912 reported a case in which brachial plexus symptoms developed after paralysis of the trapezius.

SYMPTOMS

gic, paralytic, vasomotor, or trophic in character. The vascular disturbances may be arterial with temporary obstruction at the rib, peripheral vasomotor changes, or endarteritis with or without occlusion by thrombosis. Venous disturbances with oedema are rare. In a review of 360 reported cases of cervical ribs with symptoms Halsted found that there were nerve symptoms alone in 65.3 per cent, both nerve and vascular symptoms in 29.4 per cent, and vascular symptoms alone in 5.3 per cent. The nerve symptoms vary from a tingling to neuralgia and from ataxia to paralysis.

The lowest cord of the brachial plexus is the one most commonly affected and gives rise to symptoms through the ulnar nerve and the nerve of Wrisberg. According to some observers the first dorsal root sends motor fibers to the intrinsic muscles of the hand only, while according to others it contains also the nerves of the long flexors of the fingers. As has been stated, the second dorsal frequently contributes a branch to this root.

Dupré and Todd describe a case of cervical rib in which the trunk of the seventh nerve was unprotected from damage by the anterior ends of these ribs. Clinical cases have been reported in which the symptoms appeared on the radial border of the hand, indicating involvement of the seventh root or perhaps a communication between the median and ulnar nerves. Church states that sensory disturbances of the radial nerve are present in a fair proportion of cases.

Renton describes a case in which there were girdle pains around the ribs on the same side as a long cervical rib, and disturbed sensation along the lesser internal cutaneous, the internal cutaneous, and the ulnar nerve. He explains that the girdle pain may be a reflex from the lesser internal cutaneous to the second intercostal nerve by way of the intercostohumeral which communicates with both

CLINICAL CONGRESS OF AMERICAN COLLEGE OF SURGEONS

Tenth Annual Session, Montreal, October 11-15, 1920

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THE CLINICAL CONGRESS IN MONTREAL

THE tenth annual session of the Clinical Congress of the American College of Surgeons will be held in Montreal, Quebec, October 11 to 15, 1920. The session will open with the Presidential meeting on Monday evening, and following the general plan of previous sessions, the morning and afternoon hours of each of the following four days will be devoted to operative clinics and demonstrations in the hospitals and medical schools, with scientific meetings each evening.

A program of clinics and demonstrations that will fully represent the clinical activities of Montreal is being prepared under the supervision of the Committee on Arrangements, headed by Dr. George E. Armstrong, Chairman. In this program all departments of surgery will be represented: gynecology, obstetrics, urology, orthopedics, surgery of the eye, ear, nose, throat, and mouth, roentgenology, experimental surgery, surgical pathology, etc.

The preliminary outline published in the following pages is purely tentative and will be revised and amplified in later issues. The real program of the Congress is that bulletined each afternoon at headquarters giving in detail the cases to be operated upon and demonstrated in the several clinics on the following day.

pare favorably with the programs presented by the surgeons of the great American cities in which meetings have previously been held.

HEADQUARTERS

General headquarters for the Congress will be at the Windsor Hotel, which is centrally located as regards all the hospitals. Practically the entire second floor of the hotel has been reserved for the use of the Congress. The Ballroom will be utilized for the evening sessions and certain clinical demonstrations in the afternoons. Other large rooms on the same floor will be utilized for the registration and ticket bureau, bulletin rooms, etc.

Because of somewhat limited hotel facilities in Montreal, visiting surgeons are urged to make immediate reservation of their hotel accommodations. In addition to the Windsor, the following hotels are recommended by the local committee: Ritz Carlton, Place Viger, Queen's, St. Lawrence Hall, Corona, Prince of Wales, Wilhemina, Freeman's. The chairman of the local committee on hotels is Dr. Alfred T. Bazin, 4064 Dorchester Street, Montreal, to whom

being reflex. This paralysis is characterized by absence of the "pins and needles" sensation, by flaccid paralysis of the muscles, which are soft, and by widespread cutaneous anesthesia extending sometimes well above the level of the injury and not corresponding to any definite nerve distribution.

The ischemic type of paralysis is that in which the obstruction is complete and the nervous disturbance is a direct result of ischemia. In such cases anesthesia is of a "stocking" or "glove" distribution confined to the portion of the limb which is distal to the injury and involves all forms of sensation. A sensation of "pins and needles" is felt. On palpation it is found that the muscular paralysis is associated with a hard unelastic condition of the muscles. Ischemic paralysis with obliteration of the artery has also been described but is not well known.

Makins believes it is too difficult to rule out a concomitant nerve injury of minor degree. In his opinion the differences in signs may be ascribed to varying degrees of local anemia and are not reflex in character.

Sympathetic involvement with pupillary changes in cases of cervical rib is rare as the rami communicans are given off from the first dorsal root above the point of pressure. Ptosis, myosis, retraction of the bulb, and mydriasis may be present. Church reports a case in which the recurrent laryngeal was evidently involved. Such involvement is more apt to occur on the right side.

Schmidt suggests that pressure exerted by cervical ribs upon the cervical sympathetic ganglion may be a cause of symptoms of hyperthyroidism. Disturbances of the phrenic nerve associated with diaphragm convulsions have also been reported (Streissler).

VASCULAR SYMPTOMS

Vascular symptoms are usually arterial. Venous symptoms may occur in association with the arterial symptoms but are rarely present alone. In a series of 31 cases observed by Henderson there was only 1 case of edema. Out of the total number of cases with vascular symptoms which were collected by Halsted some edema was present in 29.4 per cent but only 5.3 per cent had vascular symptoms alone.

When the cervical rib extends in front of the subclavian artery or is replaced by a fibrous ligament the artery passes over it. In exceptional cases, however, the artery has been found between the sixth and seventh cervical ribs and between the cervical and first ribs (Streissler, Eisendrath). In these cases it was compressed. Wood Jones

believes that the cervical ribs usually terminate before reaching the artery.

Symptoms may be caused also by pressure upon the subclavian artery. Murphy believed that this artery was compressed between the cervical rib and the scalenus anticus muscle. Babcock suggests angulation of the artery due to the scalenus anticus and the cervical rib as a cause of the circulatory disturbance. He states that there is no tendency to the formation of a collateral

duction of symptoms in some cases.

Mechanical pressure may be a factor in conditions in which certain positions of the arm stop the pulse altogether. Sciffer noted that in some cases of cervical rib the pulse is weakened when the arm is lifted and that when the arm is raised to the vertical position the pulse is entirely absent (Streissler). In other cases the weakness of the pulse may be relieved by raising the arm above the head, and in all cases reported by Thorburn in which the rib was removed these symptoms were relieved.

Aneurism and some of the arterial symptoms may be the result of pressure.

Halsted has been able experimentally to produce a dilatation of the subclavian artery distal to a partially occluding band and believes that this fact explains the occurrence of enlargement of the artery in 21.6 per cent of 125 collected cases of cervical rib with vascular symptoms. Hamann states that the subclavian artery beyond the scalenus anticus frequently appears dilated. To obtain an explanation of some of the vascular symptoms it is necessary to review the work of Potts, Kramer, and Todd.

In this work it was found that the subclavian and axillary arteries receive a nerve supply directly from the sympathetic chain, a fact which accounts for their usual escape from involvement in lesions associated with a cervical rib. All of the other arteries in the upper limb obtain their nerve supply from sympathetic filaments which travel along spinal nerves and are distributed to various blood vessels at irregular intervals. The distribution of nerves to the vessels corresponds roughly to the distribution of the nerves to the muscles and skin. This explains the early involvement of arteries in the hand in types of cervical rib lesions in which vessels are affected. The distal and peripheral blood vessels were also found to receive richer nerve filaments.

The process by which the blood vessels are affected appears to be: first, a stimulation of the

PRELIMINARY CLINICAL PROGRAM

MONTREAL GENERAL HOSPITAL

Tuesday, October 12

- J. A. HUTCHISON—9:00 Surgical clinic, cholelithiasis.
 J. M. ELDER—9:00 Surgical clinic, septic infection of the knee joint.
 H. D. HAMILTON and R. H. CRAIG—9:00 Ear, nose and throat clinic

- F. J. TEES and F. B. GURD—Fracture clinic.
 F. S. PATCH and R. E. POWELL—2:00 Genito-urinary operations, prostatectomy, pyelitis, kidney function in urological operations
 H. D. HAMILTON and R. H. CRAIG—2:00 Ear, nose and throat clinic.
 G. H. MATHEWSON and H. McKEE—2:00 Eye clinic.
 H. M. LITTLE and DR. PATRICK—2:00 Gynecological clinic.
 A. M. FORBES and J. A. NUTTER—2:00 Orthopedic clinic.

ROYAL VICTORIA HOSPITAL

Tuesday, October 12

- F. S. PATCH and R. E. POWELL—2:00 Genito-urinary clinic.
 G. H. MATHEWSON and H. McKEE—2:00 Eye clinic
 A. M. FORBES and J. A. NUTTER—2:00 Orthopedic clinic

Wednesday, October 13

- A. T. BAZIN—9:00 Surgical clinic, operative treatment of hernia, demonstration of fascia transplantation.
 E. M. EBERTS—9:00 Surgical clinic, type lesions of gastric ulcer
 H. D. HAMILTON and R. H. CRAIG—9:00 Ear, nose and throat operations
 G. H. MATHEWSON and H. McKEE—9:00 Eye clinic.
 DR. HARVEY—9:00 Remedial gymnastics
 F. J. TEES and F. B. GURD—9:00 Fracture clinic.
 G. H. MATHEWSON—2:00 Operations on the eye
 H. D. HAMILTON and R. H. CRAIG—2:00 Ear, nose and throat clinic.
 F. S. PATCH and R. E. POWELL—2:00 Genito-urinary clinic.
 H. M. LITTLE and DR. PATRICK—2:00 Gynecological clinic.
 A. M. FORBES and J. A. NUTTER—2:00 Orthopedic clinic

Thursday, October 14

- J. M. ELDER—9:00 Surgical clinic, empyema
 J. A. HUTCHISON—9:00 Surgical clinic.
 H. D. HAMILTON and R. H. CRAIG—9:00 Ear, nose and throat operations

Eye clinic.

Orthopedic

operations

- H. D. HAMILTON and R. H. CRAIG—2:00 Ear, nose and throat clinic
 F. S. PATCH and R. E. POWELL—2:00 Genito-urinary clinic.
 G. H. MATHEWSON and H. McKEE—2:00 Eye clinic
 H. M. LITTLE and DR. PATRICK—2:00 Gynecological clinic

Friday, October 15

- E. M. EBERTS—9:00 Surgical clinic, operative treatment of appendicitis with special regard to the prevention of wound infection
 A. T. BAZIN—9:00 Surgical clinic, abscess of the lung, traumatic paraplegia
 H. D. HAMILTON and R. H. CRAIG—9:00 Ear, nose and throat operations.
 G. H. MATHEWSON and H. McKEE—9:00 Eye clinic.
 DR. HARVEY—9:00 Remedial gymnastics

- Surgical clinic—9:00 Operations.
 Gynecological clinic—9:00 Operations.
 Urological clinic—9:00 Cystoscopy, diagnostic methods
 Eye clinic—9:00. West operation demonstrated by DR. J. A. MacMillan, anatomical demonstration by Professor Whitnall.

- Surgical clinic—2:00 Operations and demonstration of cases.
 Orthopedic clinic—2:00. Operations and demonstration of cases
 Ear, nose and throat clinic—3:30. Tonsil and adenoid operations, special cases

Wednesday, October 13

- Surgical clinic—9:00 Operations.
 Gynecological clinic—2:00. Operations and demonstration of cases
 Orthopedic clinic—2:00 Demonstration of cases
 Ear, nose and throat clinic—3:30. Operations on septum and accessory sinuses

Thursday, October 14

- Surgical clinic—9:00. Operations.
 Gynecological clinic—2:00. Operations and demonstration of cases
 Orthopedic clinic—2:00. Operations and demonstration of cases
 Ear, nose and throat clinic—3:00 Mastoid operations

Friday, October 15

- Surgical clinic—9:00 Operations.
 Urological clinic—9:00. Operations.
 Eye clinic—9:00. Corneo-scleral trephining by Drs. Stirling and Byers.
 Surgical clinic—2:00. Operations and demonstration of cases.
 Gynecological clinic—2:00 Operations and demonstration of cases.
 Orthopedic clinic—2:00 Demonstration of cases

out a radiographic examination. The true pathology is unknown. Neuritis may be present and must be ruled out. Dana describes the common brachial neuralgias and arm pains. Muscular rheumatism and arthritis deformans must also be ruled out.

Didé and Courjou describe a hypertrophic neuritis in adults with atrophy of the muscles of the hands and arms. The onset of this condition occurs between the thirtieth and fortieth years of

the symptoms in some of these cases were due to cervical ribs (Jones)

Some cases of cervical rib may closely simulate Raynaud's disease

Aneurism must be ruled out and when present a cervical rib must be considered

Disease of the spinal cord and its coverings should always be considered. Absence of oculo-

an affection of the spinal cord or its coverings

The following diseases should be considered syringomyelia, syphilis, tumors of the spine or cord, other pressure lesions, vertebral caries, pachymeningitis cervicalis hypertrophica, and poliomyelitis. The last named condition is ruled out by the presence of sensory changes.

Localized myositis ossificans, exostosis of the first rib (recognized by Syme 1853), disease of the rib, and tumor in this region occasionally may simulate a cervical rib but the X-ray will aid in eliminating many of them.

TREATMENT

Relief of symptoms associated with any anomalous or rudimentary rib, whether cervical or thoracic, or with even a normal rib depends upon many factors. If the symptoms seem to be due to a rib and there are no definite contraindications, radical removal should be considered. In cases of paralysis of the muscles elevating the shoulder, palliative treatment with local stimulation may be sufficient, but when there is progressive change intervention should not be delayed. Coote first resected a cervical rib in 1861.

The subperiosteal resection is preferred by some surgeons as it is associated with less danger of injuring the pleura and other parts. Regeneration of bone, however, may cause a return of symptoms following the use of this method.

The postoperative disturbances may be due to:
(1) a bony new formation from the stump.

especially if subperiosteal resection is done (Jones); (2) injury to the pleura with emphysema or empyema, (3) aneurism; (4) injury to the plexus at operation causing increased paralysis

persist a year or even longer.

Streissler reviewed the end-results in 71 cases. In 77 per cent the condition was cured; in 12 per cent, improved; and in 10 per cent, unimproved.

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ment J Anat. & Physiol, 1912, xl, 19
GLADSTONE A case of an additional presacral vertebra
J. Anat & Physiol, 1897, xvi, 530
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HARRIS. The true form of the brachial plexus and its motor
disturbances J. Anat. & Physiol, 1904, xxxviii, 308
II
II
1913
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Quoted by Harris

International Abstract of Surgery

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Kreider, G. N.: The Repair of a Cranial Defect by a New Method: Report of an Apparently Successful Case. *J. Am. M. Ass.*, 1920, LXXIV, 1624.

A boy, aged 4½ years, was kicked over the left eye by a horse about 2 p.m., November 18, 1919. Examination two hours later revealed a lozenge-shaped compound fracture about 3 in. long and 1 in. wide, beginning near the outer border of the superciliary ridge and passing upward and backward over the frontal prominence almost to the median line. Two large pieces of bone were driven in, causing loss of considerable brain substance.

Under ether anesthesia about 6 pieces of bone were removed. The 2 largest fragments were completely freed from the dura mater. The wound was cleaned except:

istered. On November 29 the gauze was removed under ether and the edges of the wound trimmed and brought close together. On January 7, 1920, a horse-shoe shaped incision external to the original wound was made. The edge of the dura was slightly dissected. The two fragments of bone were removed from their pocket and placed in their former position. A considerable layer of fat which had become attached to the outer surface of the fragments was utilized in sewing them into place. The flap was then brought back and closed with silkworm gut. Uneventful recovery followed.

The important fact which the author wishes to bring out is that very often it is possible to preserve fragments of cranial bones by implanting them in some other part of the body. **LOUIS HANDELMAN.**

Melchior, E.: Secondary Enterostomy following Operations for Peritonitis and Ileus (Ueber sekundäre Enterostomie nach Peritonitis- und Ileusoperationen) *Berl. klin. Wochenschr.*, 1920, LVII, 56.

The author reports 4 cases operated on at the Kuettner clinic. In all instances the secondary enterostomy proved a life-saving operation. Sec-

injuries caused by strangulation, interstitial hemorrhages, compression of the bowel wall, and extension of the inflammation to the various layers of the bowel wall. Complete paralysis of a damaged part acts as a mechanical obstruction and in cases

of complete bowel paralysis even an enterostomy is of no benefit.

Using local anesthesia if possible, the author opens the abdomen at the site of the greatest dis-

short time.

BODE (Z).

Case, J. T.: A New Aid in the Early Recognition of Postoperative Ileus. *J. Michigan State M. Soc.*, 1920, XV, 151.

In order to make the earliest possible diagnosis of postoperative ileus the author uses the X-ray as soon as symptoms of obstruction are observed.

With the bedside apparatus in present use the only manipulation necessary is in the placing of the plate-holder. No preparation is required. The plate is ready for examination in fifteen or twenty minutes. If the location of the obstruction

Hampton, H. H., and Wharton, L. R.: Venous Thrombosis, Pulmonary Infarction, and Embolism following Gynecological Operations. *Bull. Johns Hopkins Hosp.*, 1920, XXXI, 95.

Since Virchow's monumental work, thrombosis and embolism have held the attention of the pathologist, the internist, and the surgeon, and as a result a vast amount of literature has accumulated. The interest of the authors was aroused recently by several consecutive deaths from pulmonary embolism which constituted 50 per cent of the fatalities for the past year. It was quite evident to them from

that had occurred since the opening of their clinic in 1889. About 40 of these cases have been previously reported by Clark and Schenck.

The authors had been compiling their statistics but a short while when they made the observation

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the other dilutions up to 1:5,000 did not kill the growth. Therefore bacillus subtilis is less easily affected than some of the other organisms, this being due to its sporulation.

Bacillus subtilis exposed for periods varying from one-half hour to twenty-four hours to dilutions varying from 1:1,000 to 1:100,000 showed no growth after three hours when exposed to the 1:1,000 dilution, no growth after six hours when exposed to the 1:10,000 solution, and no growth after twenty-four hours when exposed to the 1:100,000 dilution. All other dilutions used for periods varying from one-half hour to twenty-four hours did not stop the growth.

These tests show that the 1:5,000 dilution is capable of destroying staphylococci in five minutes without irritation of the tissues, while dilutions varying from 1:100 to 1:500 destroy the sporulating bacillus subtilis and the bacteria of tetanus, anthrax, gas gangrene, and malignant oedema.

per cent (gravimetric method) the solutions remained perfectly clear after twenty-four hours.

R. R. MUSTELL

McKenna, W. F., and Fisher, H. A.: *The Use of Potassium Mercuric Iodide for Skin Disinfection.* *Surg., Gynec. & Obst.*, 1920, xxx, 370.

Because it was believed to penetrate the follicles more readily than other disinfectants iodine has been the disinfectant of choice for use on the skin. It possesses certain drawbacks, however, as it may cause dermatitis and irritation of the perosteum. Moreover it is contra-indicated in cases of hyperthyroidism.

Experiments have demonstrated that a 1 per cent solution of potassium mercuric iodide in acetone will penetrate the epidermal layer but not the true

The disinfecting power of potassium mercuric iodide has also been proved. The effect of an application of 1:100 solution was compared with that

per cent alcohol penetrates by means of its solvent action, readily evaporates, produces no stain, and

causes no irritation or blistering of the skin. Therefore, in a 1 per cent solution in 70 per cent alcohol or in acetone, potassium mercuric iodide is preferable to iodine for disinfecting the skin before an operation.

R. R. MUSTELL

ANÆSTHESIA

Ehrlich, S. D.: *The Present Status of General Anæsthesia from the Hospital Point of View.* *Med. Rec.*, 1920, xcvi, 651.

The author claims that it is absolutely essential for the anæsthetist to be a physician—a physician

for a thorough understanding of: (1) the physiology and pathology of the heart and blood vessels, the kidneys, and other organs, (2) metabolism and metabolic diseases—especially diabetes; (3) acid intoxication, the action of anæsthetics in inducing acidosis or aggravating it when already present, and the means of combating this condition; (4) the nature, causation, manifestations, prevention, and treatment of shock; (5) the various reflexes and their indications, and (6) the factors contributing to the patient's condition.

The large hospitals have begun to recognize the need for a visiting anæsthetist, a physician who devotes his time exclusively to the subject of anæsthesia. This work is of such importance that it should be accorded a department of its own with an established head to assume the responsibility and control. This director should hold a position on the medical board in the same capacity as the heads of the other departments.

The duties of the visiting anæsthetist should in-

however, in difficult and serious cases, he himself should administer the anæsthetic.

At the present time the system of medical education is such that the student receives very little theoretical, and little if any, practical instruction in anæsthesia. The hospital should afford every

is not fully competent to administer anæsthetics. She may be trained in the mechanical processes of

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A series of tests was made of the effects of ether and chloroform in the blood upon liver glycolysis. It was found that neither of these anesthetics had any influence on the rate of dextrose liberation from dead liver cells.

The relation of injury of the liver cells to the changes of dextrose in the blood was determined in cases of chloroform anesthesia. In order to increase the injury to the liver cells the animals were fasted for a while before the chloroform was administered. It was found that with the increased liver injury the rise in blood sugar was decreased. The reduction in the store of glycogen which was associated with the increased injury to the liver by chloroform was found to be without effect as there was no alteration of ether hyperglycemia through fasting.

The results of the experiments are summarized as follows:

1 Atropine administered before chloroform anesthesia did not reduce the hyperglycemia.

2 Atropine administered before ether or chloroform anesthesia did not alter the changes in either the heart rate or the respiration.

3 Chloroform reduced the heart rate while ether increased it, a fact which has been observed by others.

4 Chloroform caused almost twice as much respiratory inhibition as ether.

5 A two-day fast decreased chloroform hyperglycemia but did not affect ether hyperglycemia.

6 Chloroform caused much more asphyxiation through respiratory inhibition and reduced heart rate than ether. This asphyxiation is the probable cause of a large part of chloroform hyperglycemia and explains why this hyperglycemia is not altered by atropine.

ISABELLA HERB

Pena Galarza: Spinal Anesthesia in Gynecology
(La raquíanestesia en ginecología). *Rev Ibero-Am de cien méd.*, 1919, xlii 343.

unless some other form of anesthetic can be employed.

In laparotomies general anesthesia is used both to overcome pain and to prevent all movement. In cases of benign affections however, such as those that may be treated by the vaginal route, other forms of anesthesia may be employed. Because of the fear of ether and chloroform many women suffer for years from such affections as cystocele, rectocele, uterine prolapse, hypertrophied cervix, and other conditions causing frequent urination, dysuria, pelvic pain, fecal incontinence, tenesmus, leucorrhœa, weakness, etc. In such cases an attempt has been made to use a local anesthetic but this has been found inefficient. Often it was necessary to finish the operation under ether or chloroform anesthesia.

During the past three years spinal anesthesia

after the administration of large doses of aspirin. Intestinal paresis and paralysis of the legs lasted only for a few hours. The most serious complication was

be continued. In this case it was thought that the patient was placed in the supine position too soon after the injection of the anesthetic, thus allowing it to flow toward the bulbar region instead of toward the base of the spinal canal.

The technique is that usually employed in spinal anesthesia, with certain minor modifications. Perfect sterilization of the instruments and solution injected is essential. The preparation is the same as that for a laparotomy. The injection is made between the third and fourth lumbar vertebrae. The solution of novocaine is made in a ccm of serum, 10, 15, 20, and even 30 cc. of the drug being used,

near the bottom of the canal and acts only upon the portion of the cord which distributes to the region of the operation. During the first few hours after operation quiet is often very important and is efficiently maintained by this method.

In conclusion the author recommends the use of spinal anesthesia under the following conditions:

1. When the operation is to be performed by the vaginal route.

tion under a general anesthetic. W. R. MELNER

Wells, J. R.: Anhydrous Cocaine Spinal Anesthesia. *Ann Surg.*, 1920, lxxi, 504.

Wells reviews the subject of spinal anesthesia or analgesia giving the names of surgeons who have employed the method, the drug used, and the results.

From 1908 to 1914 in about 28,746 cases the mortality was not over 1 death in 1,200 cases. From 1915 to 1917 it was 1 in 16,000.

The advantages claimed for the method are: (1) perfect analgesia; (2) perfect muscular relaxa-

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SURGERY OF THE NOSE, THROAT, AND MOUTH

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At present the two methods of approach which hold the field are the nasal and frontal. Of the former, the transsphenoidal operation of Cushing is probably the best. Of the latter, the orbito-frontal operation of Frazier is the most practical procedure.

In order to make a fair comparison between the two methods of operating upon pituitary lesions, not only the route of approach, but also what can be accomplished when the objective has been reached must be borne in mind. The nasal route is narrow and unclean, and the difficulties may be much increased by acromegalic deformity of the bones. Even under the most favorable circumstances there is very little room for dealing with a solid tumor and in cases in which there is an intracranial extension, only the smallest part of the tumor can be attacked. On the other hand, the frontal operation is free from the risks of meningeal infection and allows the intracranial portion of the tumor to be inspected and dealt with. Its chief dangers are injury of the frontal lobe and serious and fatal hemorrhage from the stretched circle of Willis.

From the information available it would appear that the beneficial effects upon the vision of partial removal of a pituitary tumor through the nose or of merely allowing it to bulge downward into the sphenoidal sinus are uncertain, inadequate, and transitory.

The effect upon severe headache due to sellar distention is more uniform and may be very striking, but the condition tends to recur.

The author believes that whatever advance in pituitary surgery may take place in the future it will be the result chiefly of earlier and more accurate diagnosis, a better understanding of the objective in each case, and general improvement in the technique of the intracranial operation.

H. A. McKNIGHT

Rayner, H. H.: Trigeminal Neuralgia: Injection of Alcohol into the Gasserian Ganglion. *Brit J. Surg.*, 1920, vii, 516

The author favors the treatment of trigeminal neuralgia by the injection of alcohol into the gasserian ganglion. The technique described by Hartel is followed closely. The needle, which is inserted near the angle of the mouth, is passed through the foramen ovale and the injection is made at a point not more than 1 to 1½ cm. beyond the entrance to the foramen. The chief objection to Hartel's method is that it does not permit restriction

Of 3 patients treated by this method more than two years ago 1 has had a recurrence, but since re-injection has been entirely free from symptoms. There was no relapse in 5 cases in which the injection was given more than one year ago. Of 6 patients treated more than six months ago, 1 cannot be traced, 1 sought re-injection because of recurrence of symptoms, 3 are entirely free from neuralgia, and 1 suffers from "twitches" of pain in the bicuspid area of the upper jaw. Four patients treated less than six months ago are entirely free from neuralgia.

The author treated 2 patients who had neuralgia of the fifth nerve, non-epileptiform in character, by alcohol injection of the gasserian ganglion. No relief was obtained and 1 patient developed severe corneal ulceration. Rayner therefore concludes that simple neuralgias of this type are located in one of the neurons of the facial sensory tract above the gasserian ganglion and therefore treatment directed to the ganglion or the tract below must fail.

M. B. KILLOGG

NECK

Davis, C. B.: Cervical Rib. *Surg. Clin. Chicago*, 1920, xv, 269

Seven cases of cervical rib, all relieved of symptoms by operation, are reported.

Cervical rib is found in 1 per cent of all bodies dissected in anatomical laboratories. The anterior portion of the transverse process of the seventh cervical vertebra is really a rudimentary cervical rib. This transverse process has two centers of ossification, one anterior and one posterior in the foramen for the vertebral artery.

Cervical ribs have been divided into false and true ribs. The latter articulate like the thoracic ribs. The former consist of merely a shaft. Four groups are described by Gruber:

1. Those extending into the neck with the distal end free
2. Those articulating with the shaft of the first thoracic rib
3. Those attached to the sternum with a cartilage common to the sternum and the first thoracic rib.
4. Those attached to the sternum by their own distinct cartilage.

Cervical ribs of Groups 1 and 2 are the most common. These ribs are more frequent in women than in men; more commonly bilateral than unilateral, and if unilateral, more frequently on the left side.

The chief symptoms are: (1) the presence of a visible or palpable tumor in the neck; (2) vascular phenomena, and (3) sensory and motor nervous disturbances.

Cold seems to influence the affected side. Cold water will sometimes cause ischemia with great discomfort and blanching of the skin. Working with the arm in an elevated or extended position may also give rise to symptoms.

Injection of the eye must be protected by goggles or suturing of the lids.

Although a general anesthetic was given in the majority of cases, the author prefers the use of 1 per cent novocaine.

INTERNATIONAL ABSTRACT OF SURGERY

AUGUST, 1920

COLLECTIVE REVIEW

BRACHIAL SYMPTOMS CAUSED BY CERVICAL AND THORACIC RIBS

By GOLDER L. McWHORTER, M.D., PH.D. IN SURGERY, CHICAGO

CERVICAL ribs are known to produce hand and arm disturbances. The cause or contributing agent has been found in anomalous and even in normal first thoracic ribs. Other factors beside the ribs—such as anomalous or over-developed fascia, muscle bands, and other abnormalities—may contribute to these disturbances. Many treatises on anatomy, however, do not describe the normal relations of the soft and bony structures completely or mention the frequency of variations. Anomalies or variations of the soft parts as well as of the skeleton are frequent and it is unusual to find a body which is without some variation from the text-book descriptions. Occasionally even a text-book illustration shows a rare anomaly and thereby leads to the inference that the condition is normal.

VERTEBRAL CHANGES

Vertebral changes are almost constantly associated with variations in the ribs.

In comparing the statistics of numerous investigators Bardeen summarized those given for 1,059 spinal columns. Forty-six of these spinal columns were those of embryos, 55 those of fetuses, 50 those of children, and 908 those of adults. Twenty-four presacral vertebrae, which is the normal, were found in 91.3 per cent. The vertebra fulcralis is most closely associated with the sacrum and is usually the twenty-fifth. The number of spines with 23 and 25 presacral vertebrae was about equal, i.e., 4.3 and 4.4 per cent of the total number respectively. In rare cases there may be 26 presacral vertebrae. The explanation of this variation according to Rosen-

berg's hypothesis is that in man the sacrum is composed at first of a more distal set of vertebrae than those found in the adult. During development the lumbar vertebrae are converted into sacral vertebrae and the sacral vertebrae into coccygeal vertebrae, or during ontogenesis the iliac attachment of the limb advances along the spinal column. This change of position is believed to correspond to a similar change taking place in the phylogenesis of man. Rosenberg assumes that variation in the adult is due largely to failure of this process to extend upward as far as usual during ontogeny or to its extension beyond the usual limits.

Paterson states that the shifting is more frequently caudalward and that the lumbosacral plexus has a tendency to assimilate post-axial rather than pre-axial roots. The sacral mass would then assimilate the first coccygeal vertebra rather than the fifth lumbar. The movements of the nerve trunks and variations of the sacral mass were found by Paterson to be in harmony. This is contradictory to Rosenberg's theory of phylogenetic shortening of the vertebral column.

Dwight suggests that irregular segmentation leading to intercalation and excalation explains the numerical variation—the presence of an additional or the absence of a normal vertebra. This assumption implies a correspondence of vertebrae between which changes occur and explains unilateral duplication and other variations.

The tendency of variation in the two halves of the spine is to some extent independent. Dwight believes that the greater or less develop-

limiting the passage of air into the pleural cavity. With the finger in the pleural cavity adhesions were broken up until the lung was felt expanding on inspiration. The finger was then withdrawn, the Brewer tube quickly inserted, and the expanding inner flange drawn against the opening. The mattress sutures were then drawn up and tied, the skin was closed, and the outer flange brought down tight over a single layer of four-ply gauze. The patient was put to bed and the end of the Brewer-McHenry tube connected with a drainage container and a disinfectant reservoir. The clamp which had been previously applied to the Brewer tube was then removed and the pus allowed to flow out under the water into the container. The end of the drainage tube being under water, no air could enter the pleural cavity and at the same time the siphonage produced a mild negative pressure. The amount of pus drained was measured.

Two hours later a quantity of disinfectant equal to one-half the volume of pus removed was allowed to flow into the chest slowly from the reservoir (the patient being turned on the normal side) and was drained off again in half an hour. This procedure was repeated every two hours during the day and every six hours during the night and was continued until no more than 75 ccm. of the disinfectant could be introduced into the chest. If at this time stereo-

hospital an X-ray showed a central dilation of the œsophagus about the size of a hen's egg. Some food passed through, but most of it remained in the dilated œsophagus. An attempt was made to pass a $\frac{1}{4}$ in. tube into the stomach, but it cutled back into the sac on reaching the lower end. The child continued to lose weight. The œsophagoscope, which was passed freely into the stomach under anæsthesia, revealed no organic lesion.

In the author's opinion the dilatation was produced by the failure of the cardia to relax.

R R MISTELL.

MISCELLANEOUS

Janeway, H. H.: The Treatment of Malignant Tumors of the Thymus Gland by Radium, *Ann Surg.*, 1920, lvi, 460.

The author contends that malignant new growths of the thymus gland occur more frequently than is generally supposed, and therefore such growths should be borne in mind in the diagnosis of early thoracic affections.

A favorable result in the treatment of these

by these tumors fall into the following groups.

to arise from the stroma of the gland.

The first symptom is usually cough without expectoration or hæmoptysis. The cough may be associated at first, or very early in its course, with dyspnoea. In the beginning the condition is usually regarded as a tuberculous process of the lung. In the majority of cases of lymphosarcoma of the thymus metastases extend into the lung and pleura. The

occur before involvement of the cervical nodes

increases, hydrothorax develops, the heart becomes displaced, and the large intrathoracic vessels, trachea, and bronchi become seriously compressed with consequent cyanosis and venous congestion

and in certain instances even a prospect of cure. Every effort should be made to treat the condition with radium during an early stage.

H A MCKENRIT.

PHARYNX AND ŒSOPHAGUS

Langmead, F.: Notes of a Case of Œsophagectasis in an Infant, with Radiograms, *Proc Roy Soc Med*, Lond, 1920, xiii, Sect Dis Child, 43.

The author describes a very interesting case of œsophagectasis in an infant. The patient, a full-term baby, weighed 4 lb at birth. Before her first feeding she vomited and retched.

The bowel movements were greenish. The vomiting occurred about an hour after meals and was not of the projectile type. After the fourth month it was not so frequent, but there was persistent constipation and the stools were hard and small.

After being fed, the child appeared quiet, pale,

decidedly as it approaches complete formation and union with the sternum. The slighter variations from the normal are the more common. Gruher classifies cervical ribs as follows:

1. A short process-like projection which does not extend beyond the lateral dimensions of the transverse processes of the vertebra.
2. A blunt process of bone extending 4 or 5 cm. beyond the lateral process.
3. A rib which extends sufficiently far forward to articulate with the first rib, to the external border of the scalenus anticus, or so that it is attached to the sternum by a ligamentous cord.
4. A complete rib with a costosternal cartilage, the cartilage being separate or combined with that of the first rib

As to the frequency of cervical ribs, Fischel found them in from 0.9 to 1 per cent of bodies examined. Todd states that a rib articulating with the seventh vertebra or a rudimentary first rib occurs in about 1 per cent of cases. In my own observations on about 100 cadavers I found them more frequently. According to Streissler, they are bilateral in 67 per cent and unilateral in 33 per cent. Streissler found 60 per cent of the unilateral ribs upon the left side and Walther found such ribs on the left side in 63.5 per cent of cases.

Boehm states that the variations are greatest in the male in the caudal end of the spinal column, and in the female, in the cranial end, and that they occur on the left side. This is in agreement with the more frequent occurrence of cervical ribs in women upon the left side.

Cervical ribs are found occasionally in several members of one family (Streissler).

The etiology of costal anomalies in the cervical region is undoubtedly multiple. Blood vessels or nerves may influence the development of the rib or it may be the result of errors in segmentation or a variation in the development of the bony tissue. Todd states that the blood vessels tend more than the nerves to cause fusion of the highest rib with the second and the substitution of a ligamentous band attached to the sternum for a part of the rib anteriorly. He believes that the nerves are more common factors in the entire separation of the rib from the sternum.

According to Wood Jones the cervical vertebrae in man do not normally carry ribs because the development of such ribs is prevented by the plexiform arrangement of the nerves running to the arm which develops earlier embryologically. In his opinion nerve pressure is a cause of rudimentary cervical ribs and first thoracic ribs. The nerves denote the development first of the

vertebrae and later of the ribs. The postfixed plexus or inclusion of the second thoracic nerve may also be a factor in the development of rudimentary cervical or first thoracic ribs.

Eisler has stated that when a well-developed seventh cervical rib is found, the brachial plexus receives only a small branch or none at all from the first thoracic nerve. Black found asymmetry of the nerve trunks with asymmetry of cervical ribs.

ANOMALIES ASSOCIATED WITH CERVICAL RIBS

Putti states that a costal anomaly is inseparably associated with a vertebral anomaly (Hodgson). Other changes in the thorax may be dependent upon the size of the cervical rib as the rib and vertebra may take the place of a first thoracic rib. The processes of all of the upper vertebrae may be modified and they may all take the place of a different vertebra. Chassaignac's tubercle may be on the fifth vertebra and there may be other changes to correspond. The most frequent deformity is scoliosis. In Schoenbeck's collected cases (1905) scoliosis was found in 22, the convexity being toward the cervical rib if the condition was unilateral, and toward the larger rib if it was bilateral. Streissler found scoliosis in 16 per cent of his cases. Murphy stated that cervical ribs are present in 2 per cent of all cases of scoliosis.

Other defects may be cleft formation of the vertebrae; supernumerary, incomplete and misshapen vertebrae; or absence of vertebrae. Synostosis of one or more cervical vertebrae is common. Bifid ribs, kyphosis, and lordosis are other variations. Variations of the sternum may be associated with cervical ribs and especially with the development of a cartilage tip from the manubrium to meet a cervical rib. Other defects are club-foot, undescended testicles, and disturbances of the central nervous system such as hysteria, neurasthenia, syringomyelia, and multiple sclerosis (Streissler). According to Keen, most of the associated defects are defects in the development of the central nervous system, syringomyelia, multiple sclerosis, and progressive muscular atrophy of the cervicobulbar type. In his own cases of cervical ribs he found no defects of the soft parts or the skeleton.

RUDIMENTARY FIRST THORACIC RIBS

cervical or a first thoracic rib (Dwight). However, since rudimentary first thoracic ribs have been found to produce symptoms similar to those due

Cardiac failure as a complication of septic peritonitis is most intractable. When local collections of pus are found the author advocates temporizing unless immediate evacuation is necessary as in some instances these collections have been absorbed.

J W Ross

Foerster, A.: *Diaphragm-Paraneuritis* (Ueber bewegungsstörungen bei diaphragmenmuskulose und Paraneuritis). *Munch u med Wchnschr.* 1920, LVII, 38

Jamin and Schuermeyer found that many abdominal conditions, such as enlargement of the liver, hydronephrosis, ascites, tumors, etc., are associated with a unilateral or bilateral elevation of the diaphragm without a marked change in its respiratory excursion. Jamin has observed an elevation of the diaphragm without change in its convexity but with a decrease in the size of the costophrenic angle and immobility during respiration only in cases of subphrenic abscess.

Foerster investigated the conditions in peritoneal tuberculosis. When the patient was rayed dorso-ventrally in the standing position flattening of the convexity and apparent obliteration of the sinus phrenocostalis were observed in addition to equal bilateral elevation of the diaphragm. The respiratory excursions were markedly decreased. Foerster considers these bilateral phenomena as characteristic of peritoneal tuberculosis. When they are unilateral, they indicate paraneuritis. Acute and chronic conditions of the gall-bladder and severe forms of appendicitis and pyelitis did not present this picture.

The elevation of the diaphragm is due to the increase in the abdominal contents. In cases in which the abdominal pressure is increased, as in meteorism,

KRUPP (Z)

GASTRO-INTESTINAL TRACT

Kerley, C. G.: The Roentgen-Ray Demonstration of Abnormalities of the Gastro-Intestinal Tract in Children. *Am J. Dis Child*, 1920, XIV, 277

Roentgen-ray studies were made of 66 cases of chronic gastric and intestinal disorders in children from 3 months to 15 years of age. The following abnormalities were found: megacolon with dilated sigmoid and marked stasis, acute pylorospasm with gastric retention, elongated sigmoid causing constipation; a triple sigmoid with diarrhoea from a chronic mucous colitis following prolonged con-

stipation, elongated sigmoid with pylorospasm,

and constipation; gastro- and coloptosis with poor

in the former is associated with defective emptying of the latter. A ptosed stomach or colon which does

sacculations, adhesions, or relaxed abdominal muscles

As regards the management of these cases, it was found that the most useful corrective agent for all types of abnormalities, both of the stomach and of the intestine, is a well-adjusted abdominal belt. When there is delayed emptying of the stomach, only three meals daily should be allowed. These should be given at as long intervals as possible, with very little fluid, and should be followed by rest. Abdominal massage and certain drugs were also found to be of much benefit. *APOLIN HARRING*

Goldbloom, A., and Spence, R. C.: The Prognosis in Operated Cases of Hypertrophic Stenosis of the Pylorus. *Am J. Dis Child*, 1920, XIV, 263

The authors report the results of a study of 163 cases of hypertrophic stenosis of the pylorus in babies treated surgically.

One hundred and thirty-one children recovered and 32 died, a mortality of 19.63 per cent.

The conclusions drawn are as follows:

1. The duration of symptoms prior to operation is probably the most important single factor affecting the prognosis. When the symptoms have been present for less than four weeks, the mortality is only one-third as great as when they have continued for four weeks or longer.

the weight lost previous to operation

5. The mortality among breast-fed infants who have vomited for less than four weeks and have lost less than 20 per cent of their best weight is almost nil. The fatalities which occur in such cases are due to avoidable accidents. *P M CHASE.*

Todd (1911) studied the relation of the soft parts to the normal first rib before and after abduction of the limb. In formalin-hardened specimens it was found that abduction made no real alteration in the relation of the several structures at the inner margin of the first rib. However, in Todd's opinion the alteration in position of the soft parts explains the relief of pain experienced in cases of cervical rib when the arm is raised from the side. In this connection Todd describes an injury to the cervical nerves in a giraffe due to forced abduction of a paralyzed front leg. In a series of dissections Todd found that the nerve lay in contact with the rib in normal cases more frequently upon the right side while the artery was in contact with it only in exceptional cases. On the left side the reverse was true.

In a large series of dissections Wood Jones has demonstrated that the sulcus subclaviæ is usually formed by, and lodges, the lowest cord of the brachial plexus and is not a groove for the subclavian artery from which it receives its name.

The consideration of a post-fixed or low plexus deserves attention. Anatomical studies have demonstrated the existence of both post-fixed and prefixed or low and high plexus.

Sherrington states that the nerve supply of the scalenes, diaphragm, skin, and cervical sympathetic all show the brachial plexus to be somewhat prefixed in man as compared with the macaque.

On the basis of his dissections on apes and other animals, Todd at first concluded that the brachial plexus in primates tends to be prefixed. In man the shoulder has dropped farthest backward onto the chest and the brachial plexus is set more anteriorly as compared with other animals. This cephalic migration he considered to be an adaptation to posture, its purpose being to prevent pressure on the lowest brachial trunk. More recently, however, he has found this view untenable as the erect attitude itself involves changes in the position of the first rib of sufficient magnitude to prevent such injury. Further dissection showed that the hind-end of the brachial plexus was remarkably constant and he therefore concluded that it is incorrect to state that the mammalian plexus is prefixed in man as compared with other animals (except the cercopithecidae).

In the report of his study of the contribution of the second dorsal nerve to the brachial plexus Todd brings out several interesting points. Cunningham found a communication from the second dorsal to the first dorsal in 70 per cent of the specimens examined. Todd states that the first

dorsal nerve divides into two branches. The first branch goes to the brachial plexus and the second supplies the first intercostal space. The second dorsal nerve gives off a communicating branch which is variable in size though usually small and joins either one or both branches of the first dorsal. The function of this communicating branch to the lower branch of the first dorsal is to assist in supplying the first interspace. The function of the other branch which leads to the brachial plexus is still uncertain but undoubtedly variable. Harris states that the second dorsal nerve contributes motor fibers to the intrinsic muscles of the hand. Sherrington found this constant in the macaque. Others believe it contributes only sensory fibers to the arm.

After careful study Todd concluded that among mammals there is great variation in the communicating branches given by the second dorsal nerve to the brachial plexus. He found the communication between the first and second dorsal nerves composite in nature, partly spinal and partly sympathetic. In some instances the sympathetic fibers predominated. Histologically this communicating branch was found to be composed of both medullated and non-medullated fibers. It should be borne in mind that many sympathetic fibers reach the plexus through the first dorsal nerve. Todd believes that the vascular symptoms as well as the nervous symptoms of cervical rib are the result of pressure phenomena.

Physiological severance of vascular nerves from their proximal connection was held by Bethe to have no influence in causing degeneration of the nerves or vessels.

Todd believes that the variability in the number of sympathetic fibers passing in the communicating branch from the second to the first dorsal nerve will affect the symptoms of the lesion for if a large proportion of the sympathetic fibers reach the plexus in this manner they will be in a position which will render them more liable to injury, i.e., on the under aspect of the combined cervical eighth and first dorsal nerves. On the other hand, if the majority of sympathetic fibers join the brachial plexus by way of the first dorsal nerve, it is possible that, lying on the upper aspect of the nerve, they may escape injury for a time.

In a clinical study Todd (1911) showed that there was a marked obliquity of the upper thorax in the different phases of respiration. This obliquity, which increases the likelihood of interference with the nerve trunks, is more definite in women than in men because of the greater movement of the upper chest in women. Other

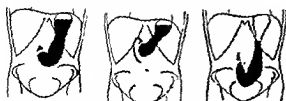


Fig. 1

Average normal stomach

Fig. 2

Hypertonic type of normal stomach

Fig. 3

Hypotonic type of normal stomach

nothing that is chemically or thermally irritating to the stomach. A little well diluted whisky is permissible with meals.

Three meals a day are sufficient for the type of stomach which empties slowly. Patients with rapidly emptying stomachs may take light lunches between meals and should have a tablespoonful of

with paraffin.

ous pain for three weeks and no evidence of active ulceration is found by X-ray examination.

The author holds that operation is indicated in cases of pyloric obstruction without symptoms of active ulceration, gastric ulcer with hour-glass contraction, recurrence of ulcer symptoms after thorough medical treatment, severe repeated hemorrhage, and when malignancy is suspected.

A. J. SCHULTZ, JR.

Struthers, J. W.: Perforated Gastric and Duodenal Ulcer; 50 Cases. *Edinburgh M. J.*, 1920, n° XLIV, 248.

The author's study is based on 72 cases of duodenal ulcer and 18 cases of gastric ulcer. Struthers has operated upon and has seen operations upon a greater number of cases of perforated ulcer than cases of ulcer before perforation or the development of other dangerous complications. In nearly every fatal case the death followed an operation performed after perforation had taken place. Twenty of the 90 patients died.

Treatment by dieting, drugs, and rest in bed

cers in which perforation was the first indication of trouble.

Of the 24 patients who suffered with severe dyspepsia the majority were men between the ages of 20 and 35 years belonging to the industrial class, and except for their dyspepsia were able-bodied.

Of 147 cases of gastric ulcer and 63 cases of duodenal ulcer treated on the medical service at the Royal Infirmary during 1913-14, 31 cases of gastric ulcer and 23 cases of duodenal ulcer were referred to the surgical service.

In cases of gastric and duodenal ulcer which do not yield promptly and permanently to medical treatment, the patients should be subjected to operative treatment at an early stage of their malady. C. R. STRICK.

Sherren, J.: The Late Results of the Surgical Treatment of Chronic Ulcers of the Stomach and Duodenum. *Lancet*, 1920, cxcviii, 691.

The author reviews in detail the postoperative conditions after a lapse of two years in cases operated upon for chronic gastric or duodenal ulcer.

A gastrojejunostomy should be done in the case of a stomach and duodenum which is generally

insures are points in its favor

Test meals were given 174 patients both before

end of the stomach. In 26 cases in which the gastric acidity was determined between four and nine years after operation the acidity was not so effectually lowered. The author does not favor pyloric exclusion.

Stricture of a gastrojejunostomy opening is due to marginal ulceration which in turn is generally the result of the use of unabsorbable catgut. In 760 cases (477 cases of duodenal ulcer and 292 cases of gastric ulcer) which were treated by gastrojejunostomy the author has had to reoperate in 7 cases because of stricture in the opening (2 cases of duodenal ulcer, 5 cases of gastric ulcer). Vomiting on the ninth or tenth day indicates that some mechanical change has taken place in the region of the anastomosis.

The author has operated on 31 cases of gastrojejunostomy. Twenty-seven of these operations followed a gastrojejunostomy for duodenal ulcer. Only 2 of the patients were women. Of 300 patients with duodenal ulcer treated surgically, 50 were women, while of 300 with gastric ulcer, 708 were women. Gastric acidity is lower in women than in men and lower in gastric ulcer than in duodenal ulcer.

Dilatation of the jejunum has been uncommon in the author's experience. Paterson found that in 73 per cent of cases in which there were complicating ulcers the symptoms began within two years after the operation. In the author's 31 cases recurrence of symptoms developed within eighteen months in 30 cases. The average period before the recurrence

Trophic or vasomotor disturbances of the hands develop frequently. That these may be due to either a primary nerve injury or an arterial injury, that secondary changes in the nerves may result from an arterial injury, and that endarteritis with occlusion of the artery may result from a nerve lesion has been well proven by studies of war injuries. However, the development of trophic changes when there is only an arterial lesion may be due to the associated injury to the perivascular sympathetic nerve.

Leriche and Heitz call attention to the fact that previous workers (Babinsky, Froment, and Heitz) have shown that a vasomotor contraction is a constant accompaniment of paralyses and reflex contractures. They have noted also that so-called ischaemic paralysis may follow obliteration of the artery and suggest that the symptoms are due, not to the arterial wound, but to the concomitant injury to the sympathetic nerves. Consequently in cases in which there are reflex troubles, such as contractures, coldness, cyanosis, cedema, and circulatory disturbances in paralysis, they dissect away this perivascular sheath or resect the sheath and vessel.

The operation is performed by thoroughly dissecting the cellular sheath of the artery which carries the sympathetic vasomotor fibers or, if the artery is occluded, by resecting the segment. The denudation must reach a length of at least 10 or 12 cm.

The results demonstrate that:

1. After a short period of arterial constriction, during the manipulation of the vessels, the operation is followed by an elevation in the blood pressure of the limb operated upon.

2. After a period of arterial constriction, it is always followed by an intense vasodilatation lasting several weeks and an increase in the temperature.

3. Resection of the obliterated artery is followed by a more intense and lasting dilatation than denudation.

4. Both operations improve the voluntary contraction of the muscles, the motor power of which was previously abolished.

Circulatory disturbances in paralysis and reflex contractures are associated with local vasoconstriction. These may temporarily disappear following the application of artificial heat. The effect of the vasodilatation obtained by the sympathectomy should be increased by hot baths of paraffin and proper exercise. The favorable action of the operation is due not only to the increased temperature and vasodilatation but also to the improvement in the metabolism

resulting from better oxygenation and better removal of waste products.

Stopford concludes that the so-called trophic disturbances are the result of vascular changes produced by incomplete nerve division associated with nerve irritation. That they are the result of uncomplicated nerve injury is evident from the improvement which follows neurolysis or resection and suture. Stopford gives proof that nerve lesions due to irritation may produce changes in the walls of arteries supplied by the nerve. A case in which there was a peripheral endarteritis in the walls of the arteries supplied by a nerve with a lesion due to irritation but no blood-vessel injury is reported in full. Stopford agrees with Todd that trophic lesions are preceded by vascular changes. Anatomical research by Kramer, Potts, and Todd has shown that the vessels of the limbs are supplied directly from the various nerve trunks and that the vascular nerves do not pass distally as a peri-arterial plexus to their distribution on the peripheral vessels. This work has proved also that the nerves supplying a muscular or skin area supply also the blood vessels of that area.

In a number of cases in which vasomotor, trophic, and secretory disturbances were present and were considered to be due to division or damage to the nerves of the limb Meige and Athanassio-Bénisty found that these changes appeared only when there was an associated arterial lesion. They believe that a co-existing arterial lesion is present in every case in which these disturbances are noted and that they are due, not to nerve lesions, but to the arterial lesion.

Exploratory operations for the mobilization of nerve trunks were usually followed by improvement in the trophic disturbances.

A common conclusion drawn by Stopford and Meige and Athanassio-Bénisty was that efforts should be made to give early relief from irritation in order that secondary vascular changes in the distal part of the circulation may be prevented.

Burrows believes that extensive paralytic phenomena may follow a vascular lesion independently of any direct traumatism of the main peripheral nerves. He calls this "angiotic paralysis." It appears that an incomplete injury or severance of the artery is more apt to be followed by extensive sensory loss and flaccid paralysis than complete division or ligation. Therefore Burrows concludes that the former symptoms are reflex in character and divides angiotic paralysis into reflex and ischaemic paralysis. In the reflex paralysis there is only a partial obstruction of the circulation, the symptoms

Gastro enterostomy will not cure all cases as there is great variety in the pathology. Marginal ulcers

most rational operation is in general the removal of the lesion with the least possible risk.

Pain is the most frequent postoperative complaint and is often due to concomitant pathology in the appendix, gall-bladder, or elsewhere.

Adhesions not disturbing motility are important only when they mask pain. Small perforations of ulcers, especially duodenal ulcers, are comparatively common and lead to the formation of abscesses which may cause symptoms in the same way as chronically infected tonsils. Any abscess in the abdomen, however small, should be drained. Chronic peritonitis may be due to tuberculous which, if active, should be demonstrated by the tests. In selected cases of tuberculous peritonitis brilliant results are obtained by the use of tuberculin.

Chronic lymphangitis around the coeliac plexus causes pain and can be cured by rest in the recumbent position and proper diet.

Marginal ulceration at the suture line of the gastro-enterostomy is not an infrequent cause of pain. Most of these ulcers close, but if they persist they must be treated operatively. Fistulae must be excised throughout their entire extent.

Epigastric pain following operation and occurring during defecation is due to adhesions to the trans-

doses of hyocyamin, proper diet, and regulation of the bowels.

Persistent diarrhoea is generally neurogenous or infective in origin. The etiology and the treatment will be indicated by careful study.

Vomiting resulting from vicious circle requires operation to widen the stoma, relieve the kink, increase the mesenteric opening, or remove adhesions.

Bleeding ulcers may result from endocrine disturbances. If they are not benefited by endocrine treatment and rest they are probably due to cancer.

M. H. POBART.

Bohmsson, G.: A Contribution to Our Knowledge of Primary Sarcoma of the Ventricle. *Acta chirurg. Scand.*, 1920, 44, 334.

The author reviews the literature and statistics in different countries as to the frequency of carcinoma and sarcoma of the stomach. In the ventricle sarcoma is much rarer than carcinoma.

Fenwick's opinion that sarcomata constitute between 5 and 8 per cent of the total number of ventricle tumors derives its chief support from the fact that the greater number of tumors of the ven-

tricle are not subjected to microscopic examination and the fact that in most cases it is impossible to decide to which class of growth the tumor belongs from the clinical symptoms or the macroscopic appearance.

Sarcoma of the ventricle occurs most frequently after the fortieth year of age, reaching its maximum incidence during the fifth and sixth decades. Lymphosarcoma occurs usually before the fortieth year of age.

The most ordinary form is the round-cell sarcoma. As a rule it appears as a firm, diffusely infiltrating tumor in the canal ventriculi, the wall of which is thereby transformed into a homogeneous mass of considerable thickness. The mucous membrane may be uneven or nodular. Later it atrophies and becomes ulcerated. The infiltration is not circumscribed but continues along submucous or subserous paths toward the body of the stomach.

Metastasis takes the same course as in carcinoma and is observed earliest and most frequently in spherical-cell sarcoma. The regional lymphatic glands are infected at an early period and are often the seat of secondary tumors. Metastases appear in the kidneys, liver, omentum, pancreas, ovaries, skin, lungs, intestines, œsophagus, mediastinum, and dura mater. In regard to the symptoms, it has been stated by the greater number of writers that

Surgical treatment is the only treatment that can be taken into account and resection in healthy tissue is the only form of operation that can be considered. The palliative measures—gastro-enterostomy or gastrostomy—are indicated only in exceptional cases as usually the orifices are not stenosed and there are no mechanical obstacles to the emptying of the cavity. The resection must be extensive, a total or subtotal gastrectomy, as microscopic strands of sarcoma tissue extend beyond the palpable mass.

Of 42 patients upon whom resections were done 9 died immediately after the operation. Fifteen have not reported any recurrence, and of the remaining 18, 6 died within a year of the operation. Twelve of the entire number radically operated upon lived more than one year afterward and 4 have been free from relapse for two years. All of those treated palliatively have died.

Ventricle sarcoma appears to have a more rapid course than carcinoma. The average period has been calculated at one and one-half years, while the average period for cancer is between two and three years.

II. A. McKNIGHT.

Deaver, J. B., and Ravdin, I. S.: Carcinoma of the Duodenum. *Ann. J. M. Sc.*, 1920, cliv, 469.

The case reported is that of a male, 63 years old, who had had pain for five months and gas distention after meals for one year. The total acidity of the

vasoconstrictor fibers; second, paralysis of the vasoconstrictors; and third, pathologic changes in the vessel wall consequent upon the nerve lesion. Potts states that if absolute proof can be obtained of the relation between damage to the sympathetic supply of an artery and morphologic changes in the vessel itself of more than focal character, the nerve damage must occur at some distance from the arterial tree and not simply in the sympathetic plexus as it lies on the vessel.

Endarteritis in cervical ribs was found by Todd and has been produced experimentally by operations upon nerves in rabbits and dogs (Fraenkel, Byrroots). Stopford compares uncomplicated nerve injury with endarteritis of the peripheral arteries with the late changes in cases of thermalgia or causalgia. In his opinion the vasomotor changes in the latter are due to a true irritative nerve lesion. Telford operated upon two cases of cervical rib in which there was neurovascular derangement. Operation completely relieved this progressive condition.

The vascular symptoms in cases of cervical rib usually begin in the fingers and spread upward. Only occasionally does obliteration of the arteries reach the subclavian (Keen). The interference with the circulation in the large arteries is not shared by the smaller arteries in every instance.

The early stage of the disease is described by Osler. In one of his cases he found that the radial pulse on the two sides seemed normal and equal during rest. After some exertion the pulse on the affected side became very small and only just perceptible and the arm became congested and cyanotic. From a study of this case it seemed that the lesion first stimulated the vasoconstrictors, the pulse becoming small, and later caused a paralysis with dilatation and lack of tone and consequent delay in the pulse. This delay has been shown by Cehanovic experimentally (Kramer and Todd). The changes in the arterial walls seem to be selective and often involve the larger peripheral vessels. The cause of this is unknown.

Weir Mitchell observed that "trophic" changes are most apt to follow wounds of the nerves to the hand or foot (that is, the lowest cord of the brachial plexus which contains the majority of the vascular nerves) and occur more rarely when the injury involves nerve branches which supply the upper portion of the limb.

The twig supplying the subclavian artery directly from the region of the ansa subclavia is not caught in the lesion of cervical rib because it

lies alongside the artery which is not locally damaged. In rare instances, however, it may be affected secondarily (Kramer and Todd).

THE DIFFERENTIAL DIAGNOSIS OF CERVICAL RIB LESIONS

Pressure upon the lower cords of the brachial plexus by a cervical or first thoracic rib should be suspected in any case of sensory nerve symptoms along the distribution of the lowest brachial cord, paralysis of the intrinsic muscles of the hand, vasomotor changes in the hand, and tumor or subclavian pulsation in the region of a cervical rib. A proper diagnosis can be made only after a careful neurological examination and with the aid of roentgenograms. Examination of the cervico-thoracic region with the X-ray shows normally that the transverse processes of the seventh cervical vertebra appear decidedly shorter than those of the first dorsal vertebra (Jones). The shape, however, must not be relied upon for a decision as to which rib is rudimentary. In some cases the X-ray diagnosis may be difficult as in the presence of a rudimentary first rib the second thoracic rib may assume the characteristics of the first.

Dupré and Todd state that whatever the radiographic appearance, there is no such thing as a true enlargement of the transverse processes of the seventh cervical vertebra. The so-called enlargement is in every instance a rudimentary rib.

There are no changes in the reflexes in cases exhibiting the symptoms of cervical ribs (Streissler). Stopford and Telford state that the greater loss of protopathic sensation as compared with the loss of epicritic sensation is characteristic of the nerve compression in cases of cervical rib. According to Thorburn, there is a dissociation of various forms of sensation as in other affections of the brachial plexus. The thermal sense, however, is most readily affected and the pain sense is more readily abolished than the sense of touch. This condition is apt to be aggravated also by cold. No very complete anesthesia was present in any of his cases.

Streissler states that at times there is a disturbance of the cervical fifth and sixth roots and rarely of the posterior roots. The latter gives rise to symptoms in the neck and the back of the head. Todd reports a case in which stretching of the cervical fifth and sixth roots resulted from paralysis of the trapezius. Murphy states that it is hard to rule out primary peripheral lesions.

"Uniradicular paralysis" due to other causes can be distinguished with difficulty, if at all, with-

In 100 cases operated upon during either the first or second day of the crisis the mortality was 19

ities were due to peritonitis. Peritonitis, the chief complication of acute appendicitis, begins with the crisis. Up to the thirty-sixth hour it is usually not dangerous, but after this period it is usually fatal.

tality is steadily falling. In 522 cases of old or recent suppurative appendicitis the mortality was 5 per cent and among those operated upon within the first forty-eight hours it was less than 2 per cent.

W. A. BRENNAN

Muehsam, P.: The Proper Section of Right Colon.

Operation is not indicated in every first attack of appendicitis as frequently this attack is also the last. The decision must be made from the condition of the pulse, the general appearance, abdominal rigidity, pain, and meteorism. If one of these signs indicates that the condition is serious, early operation should be undertaken. In recurrent attacks operation should be performed immediately. The author attaches no significance to the leucocyte count or the leucocyte curve.

Muehsam prefers the right flank incision. When the exudate is clear or only slightly turbid the abdomen may be closed without drainage, but when it is decidedly turbid or purulent, drainage or tamponade should be instituted and combined with Fowler's position. Neither irrigation nor waling off of the bowels is advisable. To obtain peristalsis early, salt solution should be given by rectum and physostigmin, pituglandol, or homonol given hypodermically.

Of 182 patients with acute attacks who were operated upon during the first, second, or third day only 4 (2.2 per cent) died.

SOLFER (Z).

Richardson, E. P.: Ileostomy for Postoperative Obstruction following Appendectomy. *Boston M & S J.*, 1920, cxxxvii, 362.

In considering the place of enterostomy in the treatment of intestinal obstruction, a distinction should be made between obstruction occurring spontaneously or late after operation and that occurring early after operation during the period of convalescence. The latter is due usually to recent plastic or partly organized adhesions which are temporary rather than permanent causes of obstruction.

Seven cases of obstruction occurring during convalescence from appendicitis are reported. In

5 of these ileostomy was done for obstruction which was apparently mechanical in nature. Four of the five patients were children. Recovery occurred in every instance with spontaneous closure of the

better to operate on an occasional case unnecessarily than to postpone operation until the later stages of obstruction have developed.

Sloan, H. G.: Gas Cysts of the Intestine; Report of a Case. *Surg., Gynec. & Obst.*, 1920, xxx, 389.

The author reports a case in which the small intestine was covered to a large extent with small cysts. A complete autopsy report is given.

The patient, a man aged 32, had suffered for fifteen years with stomach trouble. For the past two months he had retained nothing, but had never vomited blood nor passed any blood by rectum. An X-ray plate did not reveal any liver shadow under the diaphragm but the outline suggested a small gut.

Sudden abdominal pain and signs of perforation hastened operation. When the abdomen was opened clusters of gas-containing cysts attached to the lower portion of the small bowel opposite the mesentery and a prepyloric perforated ulcer completely obstructing the pylorus were found. The ulcer was closed and a gastro-enterostomy done. The patient died the following day.

In the author's opinion the etiology of the condition is mechanical.

P. M. CHASE

Lockhart-Mummery, P.: The Operative Treatment of Ulcerative Colitis. *Brit M J.*, 1920, 1, 497.

In spite of extensive clinical and bacteriological investigation, very little advance has been made during the past ten years in the diagnosis and treatment of truly chronic ulcerative colitis. The author

is a history of continuous diarrhoea followed by the constant appearance of blood in the stools. The

Carrod, A. E.: The Schorstein Lecture on the Diagnosis of Disease of the Pancreas. *Brit. Med. J.* 1920, 1, 459

The author emphasizes the fact that the diagnosis of pancreatic lesions is uncertain. In this connection he quotes Wardell who, in 1871, wrote "No symptoms are pathognomonic of pancreatic disease, an assemblage of symptoms indicates the probability of its lesion."

The factors which aid in the diagnosis of pancreatic lesions may be divided into three groups: tumor, pain, the signs of (2) failure of (3) failure of the internal secretion of the pancreas.

A mass, which is usually movable, may or may not be present in the upper abdomen in pancreatic disease. The pain is often very severe and may be continuous or paroxysmal. Vomiting and severe constipation are also prominent symptoms. Jaundice, the one pressure symptom which is worthy of note, often aids materially in the diagnosis.

In drawing attention to the supposal relation between the thyroid gland and the pancreas, the author discusses Loewis' test. Two or three drops of 1:1000 solution of adrenalin are dropped into the conjunctival sac. If dilatation occurs in from one-half to one hour, disease of the pancreas is probable.

The author discusses in detail also the various other tests for the failure of the external secretion of the pancreas and concludes that steatorrhea and creatorrhea are the most important.

Failure of the internal secretion of the pancreas may be shown by the presence of glycosuria. The author questions the value of the Cammidge reaction.

J. A. H. MacGOWAN, Jr.

McConnetti, A. A.: Splenomegaly and Jaundice, Splenectomy. *Practitioner*, 1920, civ, 278

The article presents the diagnostic features and treatment of diseases in which splenomegaly is associated with jaundice.

The outstanding features of one case which is reported in full were chronic jaundice, afebrile exacerbations, splenic enlargement, leucopenia, absence of liver enlargement, and intermittent presence of bile in the urine. The differential

of the spleen or if the spleen is a factor in the causation of hepatic cirrhosis. The fact that the spleen is sometimes enlarged before the occurrence of hepatic enlargement and the development of jaundice is usually taken as evidence of a systemic infection, but may signify a primary involvement of the spleen.

The author sums up the reasons for splenectomy in cirrhosis of the liver as follows: (1) it relieves the liver of work, (2) it renders circulating toxins more dilute in the portal vein, (3) it is of great benefit in chronic conditions characterized by increased blood destruction, (4) in the Mayos' hands it has given "extraordinarily good results."

P. M. CHASE.

MISCELLANEOUS

Straus, D. C.: Subdiaphragmatic Abscess—Transpleural Drainage of a Case Due to Abscess of the Liver. *Surg. Clin. Chicago*, 1920, 15, 377

The case reported was a case of subdiaphragmatic abscess due to abscess of the liver in a man who went to Central America a year and a half ago and while there developed malaria and amebic dysentery.

Bacillary dysentery is caused by four closely related species of bacteria: the bacilli of Shiga-Kruse, Flexner, and Strong, and the Ills-Russel Y-bacillus. The dysentery caused by the Shiga-Kruse bacilli is most severe, being associated with frequent complications and a high mortality. The changes are superficial and tend to remain localized in the mucosa, particularly about the ileocecal valve. Severe nervous and toxic symptoms, myelitis and neuritis, are common in this type and do not occur in amebic dysentery. Liver abscesses are rare in bacillary dysentery and when they do occur are usually multiple and small. Amebic dysentery usually produces a single large abscess.

Amebic dysentery is caused by the entamoeba histolytica dysenteriae of Schaudinn. In this condition deep ulcers are formed, particularly in the rectum and sigmoid flexure. The amebae enter the submucosa by way of the glands and the necrotic ulcers formed may reach even to the serosa. From these intestinal ulcers the amebae enter the veins of

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was excluded because of the presence of early and well-marked jaundice, the absence of ascites, and the absence of any definite hemorrhages. Hemolytic jaundice was excluded (in the absence of a fragility test) by the depth of the jaundice, the leucopenia, and the general appearance.

A general theoretical discussion of the three diseases follows, the conclusion being reached that splenectomy is indicated if there is evidence of involvement of the liver secondary to the involvement

Abscess is the most common complication of amebic dysentery and about 85 per cent of all tropical liver abscesses result from this condition. The abscess is usually located in the upper part of the right lobe of the liver, near the convexity and particularly near the posterior axillary line between the ninth and tenth ribs. This occurs in about 95 per cent of the cases.

Clinically, abscess of the liver is rarely observed as early as one to three weeks after the dysentery.

that in the cases of many patients with phlebitis who later developed pulmonary complications a diagnosis of pleurisy or pneumonia had been made without any reference to the possibility of infarction. They found, moreover, that a certain number of their patients who had suffered from an unrecognized pulmonary infarction died later of pulmonary embolism.

The second half of their paper, therefore, they devote to the pulmonary complications associated with venous thrombosis. In doing this they endeavor to show that these conditions have often been overlooked, and they present the clinical data by which they may be recognized. These subjects are treated entirely from a clinical standpoint as no experiments were conducted upon either thrombus formation or infarction. Free use is made of the literature, however, and in practically all of the fatal cases the clinical findings were checked by postmortem examinations. Six of the authors' most interesting cases are reported. From their investigation they make the following conclusions:

Postoperative venous phlebitis and thrombosis were not peculiar to any particular type of gynecological operation.

A number of conditions favored thrombus formation. Of these, infection and trauma were the most important.

Perineal operations were not free from these complications.

Practically all cases of thrombophlebitis were associated with a slight rise in the temperature curve.

Phlebitis and thrombosis of the leg veins when associated with pain and swelling were rarely ever followed by fatal embolism.

Pulmonary infarction occurred most often in the same class of cases and during the same period of convalescence as femoral thrombophlebitis.

Pulmonary infarction sometimes preceded pulmonary embolism.

In the majority of cases postoperative pulmonary infarction has been unrecognized heretofore.

The diagnosis of postoperative pulmonary infarction was based on the clinical picture rather than the physical findings alone.

With proper care pulmonary infarction can be diagnosed.

G. E. BRILEY

ASEPTIC AND ANTISEPTIC SURGERY

MacFarlan, D.: The Germicidal Value of Potassium Mercuric Iodide. *Am. J. M. Sc.*, 1920, chv, 586.

Potassium mercuric iodide is a distinct chemical entity formed by the direct combination of two molecules of potassium iodide with one molecule of mercuric iodide. The potassium must be in excess to prevent conversion into the red iodide of mercury. Potassium mercuric iodide is readily soluble in water, alcohol, and acetone. It is less toxic than mercuric chloride and in dilutions for germicidal use is a safe wash for the mucous membranes. As much as 6 or 8 minims of a 1 per cent solution

may be taken internally without gastric irritation. On the hands the solution is not as irritating as bichloride of mercury. It does not precipitate proteins and experience has shown that human blood serum may dissolve 100 per cent of it without any appreciable coagulation or precipitation of the albumins, etc.

The germicidal action of potassium mercuric iodide is very effective, dilutions of 1:80,000 killing such organisms as *Bacillus typhosus*, *Staphylococcus aureus*, *Bacillus bulgaricus*, *Bacillus acidilactici*, and yeasts after twenty-four hours' exposure. It is

potassium mercuric iodide on actively growing broth cultures incubated at 37.5 degrees gave the following results.

Staphylococcus albus exposed from three to sixty minutes to concentrations varying from 1:100 to 1:5,000 showed growth only in the tube exposed to the 1:5,000 solution for three minutes.

Staphylococcus albus exposed from one-half hour to twenty-four hours to dilutions varying from 1:10,000 to 1:100,000 showed growth in all tubes for periods of only one-half or one hour.

Bacillus coli communis exposed for periods varying from one to sixty minutes to dilutions varying from 1:100 to 1:5,000 showed no growth when the 1:100 dilution was used, growth for one minute only when the 1:500 dilution was used, growth for one or two minutes only when exposed to the 1:1,000 dilution, growth for one, two, three, four, and five-minute exposures when the 1:2,000 dilution was used, growth for one, two, three, five, and ten-minute exposures when the 1:3,000 dilution was used and growth up to sixty minutes when the 1:5,000 dilution was used.

Bacillus coli communis exposed for periods varying from one-half hour to twenty-four hours to dilutions varying from 1:100 to 1:100,000 showed no growth when exposed to the dilution of 1:100, growth for only one-half hour when exposed to the 1:500 dilution, growth for one-half or 1 hour only when exposed to the 1:10,000 dilution, growth for one-half, one-, and two-hour periods when exposed to the 1:20,000 dilutions, growth for one-half, one, two, three, four, and five-hour periods when exposed to the 1:30,000 dilutions, and growth for one-half, one, two, three, four, five, and six-hour periods when exposed to the 1:40,000 dilutions. With other dilutions up to 1:100,000 there was growth up to twelve hours, but at the end of twenty-four hours all growth had ceased except when the 1:100,000 dilution was used, in which case the growth continued throughout the entire twenty-four-hour period.

Bacillus subtilis exposed for periods varying from three to sixty minutes to dilutions varying from 1:100 to 1:5,000 showed growth for only three minutes when the 1:100 dilution was used and growth for sixty minutes only when exposed to the 1:5,000 dilution. Exposure from three to sixty minutes to

2 The method is harmless. This assumption is based on the fact that in some 400 recorded cases

3 The method is harmless. This assumption is based on the fact that in some 400 recorded cases

4 The most important contra indication is acute inflammation of the peritoneum. Others are

respiratory and circulatory disturbances, meteorism, and the presence of numerous adhesions

5 The simplicity, diagnostic value, and harmlessness of the method, particularly if the oxygen is withdrawn afterward, render it practicable in ordinary routine diagnostic procedure, and because of its intrinsic worth it should have a wider application.

P. M. CURSE

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Colvin, A. R.: The Clinical Course and Pathology of an Obscure Osteitis Causing Loose Bodies in Joints. *Minnesota Med.*, 1920, 14, 65

finally become free in the joint cavity. It is believed that the pieces are not sequestra. The author is inclined to accept the theory that the osteitis is due to an infection and that the symptoms arise from a low-grade inflammation.

In the four cases reported, in all of which the con-

and locking developed. In one case pain was the only symptom for four years, and in another, the only symptom, for fifteen years.

CASE 1. Man of 51. Dull aching pain and inability to extend the knee completely. No swelling or tenderness. The roentgenogram did not show the presence of a loose body but revealed a small circumscribed area on the mesial condylar surface of the femur. A year later symptoms of loose body developed and the X-ray showed a loose body in the suprapatellar region.

CASE 2. Girl of 17. First seen three years after the onset of pain which up to that time had been the only symptom. A small lesion much the same as that noted in Case 1 was seen in the roentgenogram. About a year later (four years after the onset of symptoms) severe pain and locking occurred and on operation an oval body still attached by strands of the posterior crucial ligament was found near the defect in the femoral condyle which was revealed by the X-ray.

CASE 3. Boy of 18. Six years of more or less constant pain was followed by swelling and painful movement. The roentgenogram showed an area

on one femoral condyle which appeared partly detached from the rest of the joint surface. At operation this area was found to be a partly detached piece of bone covered on one side by the joint cartilage and on the other by an irregular layer of fibrocartilage.

CASE 4. Man of 28. Symptoms for fifteen years. Catching pain lasting a moment or two. Occasionally there was absence of symptoms for two or three months at a time. The findings in the roentgenogram were practically the same as in Case 2.

These four cases represent a condition described by Koenig in 1888 as osteochondritis dissecans. It is generally believed that the condition is of traumatic origin, but the findings in the author's cases do not bear out this theory. It is clear that the separated body is not deprived of its nutrition for cartilage grows on its detached surface and capillaries are present before complete detachment. Colvin therefore concludes that infection and inflammation are the etiological factors.

W. A. CLARK.

Marsiglia, G.: On the Etiology and Pathogenesis of Multiple Cartilaginous Exostoses (Sull'etiologia e patogenesi della exostosi cartilaginea multipla). *Riforma med.*, 1920, xxvi, 177.

Multiple exostoses ought not to be considered simply as a product of local changes in the interdiaphyso-epiphyseal cartilage but as a symptom of a general morbid condition which is a distinct and true disease and is often associated with other anomalies as regards the form and length of the bones.

In the author's opinion there is some relation between rachitism and the development of multiple exostoses and both are due to alterations in the thyroid or other endocrine glands. He is more inclined to attribute the condition to pluriendocrine changes. In a case of his own multiple exostoses were associated with rachitism, but there was no appreciable variation in the development of the thyroid.

W. A. BRANNAN.

McCurdy, S. L.: Focal Putrefactions and Their Bearing on Osteo-Arthritis and Other Diseases. *J. Orthop. Surg.*, 1920, 11, 92.

The orthopedic surgeon may not hope to arrest the onward advance of an osteo-arthritis until he

the administration and may have had even a few months' instruction in physical diagnosis, but this at best can give her only a superficial knowledge. The matured judgment which comes only with a thorough knowledge of medicine is lacking. She is no more qualified to do the work of an anesthetist than an operating-room nurse who knows the steps necessary to open an abdomen and remove an appendix is qualified to do the work of a surgeon.

The fact that nurses administer anesthetics in a few large clinics is by no means proof that it is a good thing either for the patient or for the institution. Indeed, a hospital which entrusts work of this nature and importance to a nurse assumes a grave responsibility. Justice to the patient demands that he be served with the utmost skill, not only in the mechanical administration of the anesthetic, but in the ability to cope with any emergency which may arise during the anesthesia.

ISABELLA HERB.

Zueblin, E.: The Results of Ether Anesthesia on Suspected and Manifest Cases of Pulmonary Tuberculosis. *Am. J. Surg.*, 1920, xxiv, Anas Supp., 44.

Zueblin does not favor the Savage treatment—closed cone ether method—as in cases in which he has seen it used the improvement in appetite, cough, and expectoration claimed by Savage were either not noted at all or were merely temporary. He is convinced that in a large percentage of cases the onset of active tuberculosis closely followed a tonsillectomy,

careful chest examination.

Investigations on the action of ether on the tubercle bacillus have demonstrated that it partially extracts the fatty constituents of the bacterium. Experience has shown that partial antigens may be very powerful. It is not impossible that a similar process takes place in a tuberculous focus during ether anesthesia and that the undesirable effects of the anesthetic may be due in part to the liberation of toxic substances.

Zueblin mentions the need for research on the effect of ether on the liver and other organs similar to that of Davis and Whipple regarding the effect of chloroform on the liver.

R. B. BETTMAN.

Guedel, A. E.: Third-Stage Ether Anesthesia: A Subclassification Regarding the Significance of the Position and Movement of the Eyeball. *Am. J. Surg.*, 1920, xxiv, Anas Supp., 53.

It is not sufficient to know merely that the patient is in the third or surgical stage of narcosis. The anesthetist should be able to say at any time to just what part of the third stage the anesthesia has progressed. The latitude of third-stage anesthesia with ether is so great that the patient may be given more ether than necessary without immediate danger. Postoperative toxæmia, however, is in di-

rect proportion to the amount of ether administered. Light anesthesia, if acceptable to the surgeon, is therefore infinitely better than deep anesthesia.

Guedel divides the third stage of anesthesia into four strata and presents a chart correlating the various signs found in each.

The author believes that one of the most important signs in anesthesia is the condition of the eyeball. Aside from extraneous circumstances, such as positional asphyxia, hemorrhage, and shock, the patient is safe and in good condition if the eyeball is moving or stationary but eccentric. As the patient enters the first or upper stratum of the third stage of anesthesia either from above or below, a partial paralysis of the *motores oculi* is manifest. There is an intermittent contraction and relaxation, a variation of these causing a rhythmical oscillation of the eyeball, or a stronger tonic contraction of one set than of another, resulting in a stationary but eccentric globe. Occasionally, in alcoholic patients or a peculiar and slight lateral direction, may not occur until from three to five seconds after the lid has been raised for inspection. The inspection therefore should not be momentary. When the twitch occurs, either late or early, it means that the paralysis of the *motores oculi* is only partial.

If a rhythmical oscillation, an eccentric stationary globe, or a twitching is noted, the patient has not had too much anesthetic and, other things being equal, the ideal stage of surgical anesthesia has been reached.

ISABELLA HERB.

Ross, E. L.: The Effect of Atropine on Chloroform Hyperglycemia. *J. Pharmacol. & Exper. Therap.*, 1920, xv, 135.

A group of animals were anesthetized with chloroform and the increase in the blood dextrose was determined. Another group of animals were given atropine before chloroform anesthesia and the change in glycemia was determined. The variation in the amount of sugar in the blood was not affected by atropine.

As it had been reported previously that atropine administered before ether anesthesia reduces the

of anesthesia with ether was compared with that of chloroform. It was found that atropine did not alter the effects of either chloroform or ether. Chloroform caused more asphyxia by this phase of its action than ether.

The influence of ether and chloroform anesthesia on the heart rate as altered by atropine was measured. Atropine did not materially change the relations with either chloroform or ether. Chloroform caused a decrease in the heart rate about equal to the increase caused by the ether, approximately 5 per cent.

The author describes in detail the anatomy and function of the active foot, emphasizing the fact that ligamentous strain which produces flatfoot is due primarily to the loss of tension and balance in the muscles, chiefly the supinators and flexors. Outward rotation of the calcaneus and descent of its anterior portion mean flatfoot. Predisposing

formity which may or may not constitute a disability

Formerly deformity was wrongly estimated by means of soft-tissue prints, roentgenological estimation from the lateral aspect of bone displacements of the passive foot, and casts of the non-weight-bearing foot made for correction and to obtain the specifications for shoes. The estimation should be made from the active foot. For this the author uses his "rotameter," an instrument the chief feature of which is a platform to be placed under the feet, each half of which can be tilted until the external promontory of the tubercle of the os calcis lies anteroposteriorly to the lower border of the external surface of the trochlea of the talus. A solid post carrying an adjustable cross arm at the level of the inner surface of the talus stands midway between the inner malleoli to correct the rotation.

With the feet thus exactly corrected and the ball snugly secured by a transverse strap, a mould of the foot is made. The heel support made from this mould tilts the heel like the Thomas heel. It serves also to keep the astragalus from slipping further inward and downward as the position of correction made by the post on the rotameter is retained by the lateral portion of the heel plate.

In addition to the use of this mechanical device the circulation should be stimulated by daily massage and passive motion with special attention to dorsal flexion. Exercises also are of value, the most important being active, slow, and firm contraction of the toes, the patient standing with the toes over the edge of the pedestal. Walking straight instead of toeing out is another important factor in the correction of the condition. R. G. PACKARD

Carling, J.: The Treatment of Weak or Flat Feet, with Report of a New Combination Foot Support. *Mil Surgeon*, 1920, xlv, 423

The author gives a brief description of the anatomy and function of the normal foot. He states that weak or fallen arches are due to ligamentous strain after weakening of the muscles of the foot.

Carling's arch support consists of: (1) a full-length flexible insole bearing on its under surface two compartments to be filled with felt or other

arch and, by strengthening the shank of the shoe, maintains the efficiency of the support. The support is light, flexible, adjustable, comfortable, simple, and efficient. R. G. PACKARD

Bryan, L.: Bony Changes in Feet following Fracture of the Vertebrae. *Am J Roentgenol.*, 1920, n s vii, 123

The author cites two cases in detail in which fractures of vertebrae were followed by bony changes in the feet. In the first case the astragalus and some of the metatarsals and phalanges were involved. The second case involved the metatarsals and phalanges.

In both cases an interval of several years intervened between the time of the injury to the spine and the changes in the feet.

In the author's opinion such changes are due at least partially to repeated trauma.

ADOLPH HARTUNG

FRACTURES AND DISLOCATIONS

Saner, F. D.: The Plating of Simple Fractures. *Lancet*, 1920, cxcviii, 812

The author points out that two main principles must be observed in the treatment of any fracture: (1) the bone must be restored as nearly as possible to its original anatomical line, (2) the complete function of the joints above and below the site of the fracture must be maintained. These principles are interdependent. Simple fractures may be treated by means of accurate splinting or by open operation. Saner favors the latter and explains how some of the main objections to it may be overcome.

Careful technique and the avoidance of postoperative hemorrhage are important factors in the prevention of sepsis. It is desirable also to make the incision sufficiently large to prevent traumatism during the manipulation of the fragments. The plates and screws do not often cause after-effects.

mends the use of an arch support and describes one of his own which he claims will meet all requirements

consciousness; and (7) immediate resumption of gastro-intestinal activity if operative conditions permit.

which in turn causes psychic disturbances; (3) difficulty in controlling the dosage of the analgesic agent; (4) the fact that the agents for inducing spinal anaesthesia are not always readily obtainable and their administration is not as simple as that of general anaesthetics; (5) the possibility that the analgesia may not be complete because of inertia of the anaesthetic or its failure to enter the subarachnoid space. Complete or partial failure of analgesia, unilateral or delayed analgesia, occurs in from 4 to 9 per cent of cases.

The indications and contra-indications vary with different surgeons, the drug agent, the technique, and the experience of the operator. The indications recognized by surgeons who have had a sufficient number of cases to be capable of judging are: (1) cardiac conditions with or without broken compensation; (2) renal conditions, especially in the presence of impending uræmia; (3) pulmonary conditions other than acute febrile tuberculosis, large

pulmonary effusions, and large intrathoracic growths, (4) inguinal, femoral, and ventral herniæ; (5) shock, if the blood pressure is not too low or falling, especially shock arising from injuries to the legs or pelvis and severe burns; (6) acute abdominal conditions, including appendicitis with or without peritonitis, intestinal and paralytic obstruction; (7) reduction of dislocations; (8) operations on the anal region, urethra, bladder, prostate, uterus, and uterine appendages; (9) plethora, atheroma, and chronic alcoholism; (10) an acute operative condition developing within a short time after the ingestion of a full meal.

The contra-indications are: (1) low blood pressure (hypotension); (2) turbid spinal fluid; (3) diseases or tumors of the brain, cord, or meninges, (4) recent syphilis, (5) intrathoracic conditions such as very large effusions and large growths, especially mediastinal; (6) advanced toxic cases of peritonitis; (7) acute febrile infections, especially acute pulmonary tuberculosis; (8) general sepsis or suppuration near the point of spinal puncture, and (9) inability of the patient to stay in bed twenty-four hours after the operation.

Purified hydrochlorate of cocaine is the anaesthetic of choice. This cocaine should be used to the exclusion of other substitutes which are less active and less diffusible and which consequently necessitate stronger doses.

ISABELLA HIRSH

SURGERY OF THE HEAD AND NECK

HEAD

Sargent, P., and others: Discussion on the Surgery of the Pituitary Gland. *Proc Roy Soc Med*, Lond., 1920, xiii, Sect Surg., 35

Lesions of the pituitary gland give rise to three groups of symptoms:

1. Those dependent upon disordered function, that is, excessive or deficient activity or a combination of both.

2. Those which result from an increase of the general intracranial pressure.

3. Those due to pressure upon neighboring structures, particularly the optic chiasm.

It is now commonly believed that gigantism and acromegaly are manifestations of an excessive activity of the pituitary gland, while infantilism, adiposity, and impotence result from deficient activity. There is thus an analogy between the functional disorders of the pituitary gland and those of the thyroid gland. In both cases the symptoms of excessive or deficient functional activity may merge. Cushing is the only surgeon who has operated in this condition. In one case he removed a portion of the pars anterior and in another he did a subtemporal decompression. In both instances the operation slightly alleviated the symptoms.

In cases with symptoms of increased intracranial pressure, pressure symptoms mark the beginning of

the terminal stage. A simple decompression will overcome the headache due to general intracranial pressure, but cannot be relied upon to relieve the "bursting" frontal pain caused by sellar distention. In cases which show papilloedema, subsidence of the swelling is to be expected after decompression. It is probable that simple decompression will prove to be a useful, if not an essential, preliminary to a frontal attack upon a pituitary tumor.

Hitherto, the pituitary region was subjected to surgical interference chiefly for visual disturbances. All of these cases show intracranial extension and Cope concludes that all pituitary tumors which come to operation for symptoms other than acromegaly have long before burst the bounds of the fossa.

The majority of tumors which arise in the pituitary gland appear to be of an adenomatous character, and are called by Cushing "chromophobe struma," that is to say, an adenomatous hyperplasia characterized by deficiency or absence of the eosinophile granules which seem to be associated with functional activity.

A large number of operative procedures to approach the pituitary fossa have been proposed and practiced. Such procedures fall into two groups: the extradural, including transpalatal, nasal, and paranasal operations, and the intradural, comprising temporal and frontal operations.

time and discusses the various methods used in the estimation of the basal metabolic rate. The best apparatus of the closed-circuit type is that of Benedict, but for general clinical work the gasometer method described by Tissot in 1904 is considered better.

The procedure used in the metabolism laboratory at the Mayo Clinic is described in detail. An average of 30 estimations are made each day and the chance of technical error has been reduced to less than 1 per cent of the tests.

The determination of the basal metabolic rate is of the greatest value in dealing with disorders of the thyroid gland as it is a very accurate mathematical index of the degree of functional activity. In exophthalmic goiter the metabolic rate may rise to more than 100 per cent above normal, while in myxedema with apparently complete cessation of the thyroid activity it may fall to about 40 per cent below normal. In milder cases of either group the variations from the normal are proportionately smaller. No definite instance of an increased basal metabolic rate has been found in patients suffering from neurasthenia or chronic nervous exhaustion. The basal metabolic rate has therefore proved to be of great value in the differential diagnosis of neurosis simulating hyperthyroidism and true hyperthyroidism.

The result of treatment in disorders of the thyroid gland may be estimated accurately by following the change in the basal metabolic rate. The general effect of the treatment adopted at the Mayo Clinic for severe cases of exophthalmic goiter is illustrated by the following data: "In a group of 22 patients the average basal metabolic rate before treatment was instituted was +66 per cent, with a pulse rate of 123. As a result of rest in bed and two ligations the rate in these patients before they went home had decreased to +46 per cent and the pulse to 115. The further improvement that occurred from three months' rest at home reduced the average meta-

cutis vera showed typical *Leishmania tropica* bodies. Histologic examination showed marked downward infiltration by epithelial proliferation and many cell nests. There was no evidence of endothelial proliferation within the blood vessels. Considerable round-cell infiltration (mostly lymphocytes) and large endothelial cells, but no giant cells were seen. Following the excision, the wound healed by first intention.

The second lesion described was an ulcer excised from the lip of a patient having multiple Oriental sores. In this ulcer the *Leishmania tropica* bodies were found in smears and the histologic appearance was similar to that of the first sore described. The lesions healed following treatment with intravenous injections of antimony tartrate.

In both cases there was no evidence of clinical malignancy. While true carcinoma may develop in a certain number of these ulcers, *Leishmaniasis* appears as a rule to be a self-limiting infection even when untreated and no carcinomatous lesions have resulted in aninals after inoculation with Oriental sore.

As the lesions described resemble the squamous-cell carcinoma histologically, it is important, if possible, to detect the presence of the *Leishmania* bodies. Various means of obtaining smears are described. In cases of long standing the *Leishmanian* bodies tend to disappear. J. E. McCorvin.

Champay, C., and Coca, F.: The Pathogenesis of Cancer and Cultivation of Tissues (Patogenia del cancer y cultivo de tejidos). *Med. Ibera*, 1920, 7, 73, 93.

The growth described by the author was a small, pedunculated, polypoid tumor in the cavity of the cervix somewhat club shaped but not protruding outside of the cervical canal. As a result of biopsy done upon the free extremity a diagnosis of endocervical epithelioma was made and a hysterectomy was performed.

The greater part of the tumor was made up of a simple polyp or polypoid adenoma in which there was no evidence of cancerous change. Malignant degeneration was present only at the tip where the tissue was originally excised for microscopic examina-

G. S. FOULDS

Macadam, W.: On the Histologic Resemblances of Oriental Sore to Epithelioma. *Brit. J. Surg.*, 1920, vii, 487.

The author, while in the East, examined histologically a number of excised skin lesions of the type of Oriental sore sometimes called Baghdad boil or Delhi sore. Most of these showed the characteristics of a chronic ulcer, those which were more chronic having an epithelial downgrowth at the

endocervix. The glands were perhaps less deeply invaginated than in similar polyps. The superficial epithelium was formed of mucous cells with cytoplasmic granulations. At the free margin a border of coarse and short cilia was present, the longer cilia being nearer the center of the cell. As these cells give the mucous reaction in staining they were probably at one time ordinary ciliated cells which had undergone mucous degeneration. The nuclei were crowded close to the base by the mucous material. The connective tissue was embryonic in type and contained many eosinophile leucocytes.

A cervical rib can usually be demonstrated by the X-ray. Occasionally similar symptoms may arise from fibrous or cartilaginous structures in the same location.

There are two methods of operative approach:

1. Incision through the muscles of the back down to and at right angles to the transverse processes of the vertebrae.

2. An angular or curved 3-in. incision, the lower half of which is parallel to and $\frac{1}{2}$ in. above the

expose the subclavian vein or to touch the phrenic nerve. The brachial plexus must be pushed forward and backward to expose the rib with as little displacement as possible. Injury to the suprascapular and spinal accessory nerves must be avoided.

The shaft of the rib with its periosteum must be removed to prevent recurrence.

In one case a portion of the first rib was resected and the vessels and nerves dropped into the cavity. This is a more dangerous operation.

Anæsthesia of the skin over the shoulder sometimes follows the operation, but disappears in a few months.
M. H. HOBART.

Roeder, C. A.: Toxic Goiter following Epidemic Influenza. *Surg., Gynec. & Obst.*, 1920, xvi, 357.

It is commonly believed that the nodular or adenomatous and hyperplastic goiters are frequently, if not always, caused by infection. The recent epidemics of influenza left more numerous and more varied complications than any other known infection. Among such complications were noted 8

nd immediate-

cases, 3 were

; very toxic.

The toxæmia may have been present before the epidemic, although it was not noted. In the other 5 cases of hyperthyroidism the condition definitely followed the influenza.

Since this paper was written the author has observed 5 more cases of goiter following influenza, 3 of exophthalmic goiter and 2 of toxic adenomata.

I. W. BACH

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Dalmazzoni S.: Observations on a Method of Operating for the Treatment of Purulent Pleurisy (Osservazioni su un metodo d'intervento nella cura delle pleuriti purulente) *Riforma med.*, 1920, xxxv, 1066.

More than 90 per cent of the operations performed by the author in 30 cases of purulent pleurisy were successful. The method of Schiassi was used. When radiography and puncture showed the presence of free exudate in the pleural cavity, an incision varying in length from 12 to 14 cm. was made near the tenth rib and after the insertion of an aspiration needle 3 or 4 cm. of the rib were resected. While

off by adhesions. In planning the treatment the surgeon must seriously consider the nature of the infection and its effect especially on the heart and great blood vessels.

The effect of a pleural exudate varies. Asserson and Rathbun consider the development of an effusion as an attempt on the part of nature to resist the infection and give comfort by keeping the inflamed pleural surfaces apart. In most cases the exudate disappears with the subsidence of the pulmonary inflammation, but occasionally it persists in the form of an empyema. Streptococcal exudates should never be drained while the pulmonary infection remains active. Careful aspiration in case of respiratory embarrassment is all that is necessary. Pneumococcal empyema is nearly always a sequel to pneumonia and therefore invariably becomes a surgical problem. In the cases reviewed the average duration of illness before operation was thirty-three days and the operative mortality about 14 per cent.

The operation was done in most instances under procaine anæsthesia. About $1\frac{1}{2}$ in. of the seventh rib were removed subperiosteally, the section being begun in the mid-axillary line and extended backward. Mattress catgut sutures were put through the muscle on either side of the wound and left long to be tied later. The pleural cavity was aspirated with a needle passed through the space made by the removal of the rib.

having been reduced was withdrawn and of the knife was followed by the index finger which filled in the opening as fast as it was made, thereby

treatment useless and harmful. Recovery followed in from ten to twenty days. W. A. BRENNAN.

McGlennan, A.: The Management of Empyema. *N. York M. J.*, 1920, cxi, 590

At the present time the term "empyema" is used to signify a purulent exudate within the general pleural space. This exudate is limited only by the extent of the infective process and the condition therefore differs from intrapleural and intralobar abscesses which are local collections of pus walled

cells in both cases is almost identical. The investigations, therefore, do not attempt to explain the cause of malignant neoplasms but demonstrate how this unknown cause acts. W. R. MEERER.

Whitman, R. C. A Study of Four Cases of Beginning Squamous-Cell Carcinoma of the Cornifying Type. *J. Cancer Research*, 1920, v. 155

The carcinoma cell is a new variety of cell arising by somatic mutation from a normal cell existing either as a cell rest or normally intercalated in the tissues of the host and retaining in almost every case enough of the properties of the parent cell to render its point of origin recognizable within certain limits.

The cause of such mutative changes can be only surmised but apparently they are favored by hy-

rritants exercise a specific power to interfere with the mitotic process.

Such mutations are apt to recur from time to time in the growing tumor, bringing about a pro-

from time to time and from region to region of the tumor.

carcinomata depend not upon the tissue of origin, but upon the character of the responsible mutative change. SUMPT. KAHN.

BLOOD

Graham, G. S.: The Iæmic Basophile. *J. Exper. Med.*, 1920, cxxi, 209

The basophilic granule exhibits certain physical and chemical reactions that appear to be different from those of the neutrophilic and eosinophilic types. It seems chemically more stable and biologically more inert. A study of the cell forms of the leukæmic blood of man suggested that the metachromatic basic staining granular substance was the result of changes in the granules of the essential or true leucocytes or myelocytes. The progress of the changes leading to its appearance could be followed in the cells showing heterochromatic granulation. In such cells as the ruptured eosinophilic myelocyte the benzidine-active substance appeared to be changed gradually into a substance no longer endowed with the property of reacting to a benzidine solution. This change was taken to imply a fundamental alteration in the nature of the granular material. The concomitant acquisition of a basic staining property of peculiar type served as further evidence of the chemical

alteration. In the cells as a whole there were

resistant to physical and chemical agents which were destructive to the benzidine-active granular substance. Associated with the granular changes there appeared to be a progressive degenerative change in the nucleus. The nucleus shrank, became more compact and more heavily stained, and took on a crumpled or shriveled appearance. The end-product was a small cell with a gnarled nuclear mass and a thin cytoplasmic envelope crowded with the basic staining remains of its original granules. In some other instances degenerative change went forward less rapidly or, in other words, the cell was able to maintain a metabolism more nearly equal to the normal so that despite the progress of the granular changes it secured as a whole a better approximation to the normal evolutionary course. Under these conditions the nuclear appearance simulated that of the true leucocyte more or less closely, while a considerable amount of cytoplasmic substance remained in which the granules tended to be relatively fewer than in the first case and more lightly stained. This was the type usually found in normal blood, while the smaller type was more typical of leukæmic blood.

The contention that the basic staining granules

hand indicated that benzidine was quite sufficiently sensitive to accomplish this result. It seemed hardly possible to the author, therefore, that definitely formed granules of essential type could fail to give a benzidine reaction.

From this study the conclusions drawn are as follows:

types also in other important microchemical and physical particulars.

The hæmic basophile which bore these granules was peculiar from a purely cytological standpoint, while physiologically it appeared to be devoid of any functional activity comparable with that of the other granulocytes.

In every instance, at least in mammalian blood,

ic cells and perhaps, in rare cases, from those of neutrophilic type. G. E. BERRY.

Heublein, A. C.: Radium Treatment of Enlarged Thymus Glands in Infants. *Am. J. Roentgenol.*, 1920, n.s. vii, 191.

Enlargement of the thymus gland is a comparatively common affection in infants and in a great many cases the direct or indirect cause of sudden death. The condition may be recognized easily from the history, physical examination, and roentgenogram. Up to a little more than two years ago roentgen therapy was believed to be the only effective method of treatment. At that time the author used radium on a well-defined case, partly as an experiment and partly because of the observation that radium caused a more rapid diminution in the size of other pathologic overgrowths. As the result was so eminently satisfactory he has treated all other cases in the same way.

The technique followed was crossfiring with 100 mg. of radium element filtered through 0.3 mm. silver at $\frac{1}{2}$ in skin tube distance through four portals of entry, the tube being placed over the anterior aspect of the chest directly over the thymus gland. The tube was left two hours in each position, making a total dosage of 800 mg. hours. However,

as time is such an important factor in these serious cases, Heublein now uses 200 mg. with half the time of exposure.

In his series of 41 cases the dosage administered seemed to be sufficient to cure large as well as small thymic overgrowths in one application, and as it has been proven conclusively that the thymus has no function after birth, there need be no fear of over-treatment. In none of the author's cases was there any tendency to regeneration of the gland. Possibly these results could have been obtained by a single intensive X-ray treatment, but no such results have been reported in the literature. Radium as well as the roentgen ray is specific in its effect, but radium has the following advantages: it is portable; it gives the desired result in one treatment, its use is simple and therefore the dangerous element of fright which causes infants to resist the fixation necessary in roentgen-ray treatment and which may be the exciting cause of thymic crisis and death is eliminated. In addition the procedure is safe as the skin tube distance never varies even in the treatment of a very refractory child. Detailed reports of four cases are given. ADOLPH HARTUNG

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Steward, F. J.: A Clinical Lecture on the Treatment of Septic Peritonitis. *Brit. M. J.*, 1920, 1, 527.

In his discussion of the causes and treatment of septic peritonitis the author states that if the diagnosis and therapy were based upon a knowledge of the cause the death rate would be appreciably decreased. The term "spreading peritonitis" he believes is more accurate than the term "general peritonitis."

The presence of a large amount of highly toxic fluid in the peritoneal cavity is a result of septic infection and brings about a severe toxæmia associated with vomiting and often with paralysis of the bowel. The course of the condition depends upon the completeness of the removal of this fluid and the treatment of the associated dehydration and threatened ileus. The removal of the exciting factor (e. g., the appendix) is advisable if the danger is not increased thereby.

Special emphasis is placed on the importance of thorough drainage. Simple tube drainage should be downward. If this is impossible, a gauze wick may facilitate drainage but care must be taken to see that it does not hinder it. In severe cases the author employs continuous irrigation with saline solution by means of Carrel tubes. Several tubes are introduced into the abdomen and one of them is led to the pelvis. A large-bore drainage tube is also led to the pelvis and fixed to the skin. Partial closure and light gauze packing complete the operation. The patient is then placed in the Fowler position

on a padded bedpan and warm saline solution is allowed to flow into the wound at the rate of about a drop per second for a period varying from three to six days. The pelvic Carrel tube is left in place for several days after the others have been removed. To offset the loss of fluid due to vomiting saline solution given subcutaneously and by rectum is of value. When there is much distention and when, after operation, attempts to relieve the paralysis fail, puncture and evacuation of the gut are indicated. Priturin and later turpentine enemas may also be tried.

By means of warmth, rest, saline solution, and small doses of morphine and atropine the patient may be revived to such an extent that he may be able to withstand an operation which otherwise would be impossible. In this connection the author states that in toxic cases he does not favor spinal anesthesia.

The treatment must be based upon the requirements of the particular case. In early cases of perforating ulcer the abdomen may be closed after it has been flushed with saline solution. A primary closure may be made also in some cases of appendicitis with peritonitis but only if the patient is young and vigorous. In other cases gauze drainage is necessary for a few days.

Case histories which demonstrate the application of continuous irrigation are given. Three recoveries in 4 cases of extensive peritonitis resulted in from four to twelve weeks. The administration of morphine should be avoided when possible. The author recommends 10 gr. of medinal or $1\frac{1}{2}$ gr. of dial.

... of yellow
or fluids,
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serum from patients recovering from epidemic

of poliomyelitis, 3 of cerebral hæmorrhage, and 1 each of meningeal hæmorrhage, cord tumor, pachymeningitis, and cerebro-spinal meningitis. Tuberculous meningitis was present in 66½ per cent of the cases.

The author's conclusions are as follows: (1) yellow spinal fluid occurs in a wide range of diseases of the spinal cord and meninges, (2) the complete syndrome of Froin is comparatively rare, (3) in acute or subacute conditions the presence of yellow fluid strongly suggests tuberculous meningitis or poliomyelitis.

W H NADLER

EXPERIMENTAL SURGERY AND SURGICAL ANATOMY

Ascoli, M., and Fagioli, A. • The Pituitrin Test. *Endocrinology*, 1920, IV, 33.

The authors have previously described the sub-epidermal test with adrenalin. In that test, 0.05 ccm of a 1:1,000 solution of adrenalin causes a swelling which almost immediately becomes dark blue. This swelling later is surrounded by an alabaster-like halo with irregular branches outward. Around the latter appears a red halo which varies in its intensity and width.

The complete reaction to adrenalin injected sub-

When weaker solutions of adrenalin are used (1:200,000—1:1,000,000) the reaction is still definite, but the central blue spot is absent and the external red halo is not intense. A distilled water control is indispensable, especially when the weaker solutions are employed.

In normal persons the test is positive when dilutions of 1:200,000 to 1:1,000,000 are used. The test is subnormal—negative with these weak solutions—in some cases of chronic adrenal insufficiency and Addison's disease. It is increased—positive with dilutions up to 1:20,000,000—in some cases of disturbed menopause, hypertension, Basedow's disease, and pregnancy.

Using commercial solutions of pituitrin in sub-epidermal injections the authors obtained reactions

down's disease. It is subnormal—negative with the stronger dilutions—in some cases of chronic adrenal insufficiency. In most cases the pathologic reactions to adrenalin and pituitrin are clearly shown dissociated and even opposed.

The technique employed is as follows:

A small area of the skin of the abdominal wall is made tense. In this spot the hypodermic needle is introduced subepidermally so that it is clearly seen underneath the skin. The injection must not be intradermal. One twentieth of 1 ccm of the solution employed is then injected. In every experiment an injection of distilled water should be given as a control in order to determine the general reactivity of the skin.

SAMUEL KAUW.

Brown, W. H., and Pearce, L. • Experimental Syphilis in the Rabbit. I. Primary Infection in the Testicle. *J. Exper. Med.*, 1920, LVII, 475.

ing to syphilitic infection by experimental means. During the years following, numerous methods of inoculation were devised and perfected and the resulting infections were studied in great detail. The hope of obtaining an experimental infection analogous to the human disease by local inoculation, however, was not fully realized. Isolated instances of generalized infection with the occurrence of lesions of various types have been reported from time to time, and while some investigators have obtained such evidence of generalization in as many as 50 per cent of the infected animals, these occurrences have been comparatively rare in the experi-

varied as a rule from two to six weeks and under properly chosen conditions could be reduced to approximately three weeks or less.

The infection pursued a typically cyclic or relapsing course and affected both the spirochaetes and the associated lesions in the testicle. The spiro-

quiescence or regression which followed closely upon the changes exhibited by the spirochaetes.

Reeves, T. B.: A Study of the Arteries Supplying the Stomach and Duodenum and their Relation to Ulcer. *Surg., Gynec. & Obst.*, 1920, xxx, 374

At operation practically all ulcers of the stomach are found along the lesser curvature. Ninety-eight per cent of the duodenal ulcers brought to operation at the Mayo Clinic are found within $1\frac{1}{2}$ in. of the pylorus, the greater number of these being on the anterior wall. In order to determine whether or not there is any difference between the character of the arteries which supply these regions of the stomach and duodenum and those which supply the remainder of the organ, the author studied 62 human stomachs, most of which had been injected with slightly acid gelatin-carmin solution prior to their removal.

Reeves reviews the anatomy of the arteries supplying the stomach and describes the arteries to the gastric submucosa. A decided difference is noted between the arterial plexus in the submucosa of the lesser curvature and that of the submucosa of the remainder of the stomach. The arteries of the former are much smaller than, and almost twice as long as, similar vessels in other parts of the stomach, and make few anastomoses.

The submucous plexus gives off two systems of branches; one passes to the muscular coats, the other to the mucous coat. The system of vessels to the mucous coat is rather complicated; the arteries proceed in a slanting, tortuous, spiral course toward the muscularis mucosæ. As the stomach becomes distended with food the tortuosity is lessened and a fuller blood supply to the mucosa is gained during the digestive activity. It is found, however, that there are two permanent folds, one along either side of the lesser curvature. These do not disappear on gastric distention.

The first $1\frac{1}{2}$ in. of the duodenum receives its blood supply chiefly from the supraduodenal artery, which is given off by the gastroduodenal or hepatic artery. The submucosa of this part of the duodenum contains very few arteries in comparison to the other parts. This is especially notable on the anterior surface. These anatomical facts may explain the "anemic spot" described by Mayo, which is usually seen on the surface of the bowel in this region when its wall is under tension.

Hæmatogenous infection has been considered by many investigators as a potent etiological factor in the production of gastric and duodenal ulcer. Virchow was among the first to point out that a thrombosis or other vascular lesion producing obstruction of the vessels in the gastric mucosa results in a hæmorrhagic necrosis. In the presence of gastric juice this tends to cause the formation of an ulcer. In the area of predilection for ulcer formation the blood supply is not so free as in the other parts of the stomach as the arteries are smaller and longer and make fewer anastomoses. The fact that permanent folds along the lesser curvature of the stomach remain even during

gastric distention tends to make the blood supply of the area relatively less than that of the remainder of the stomach during digestive activity. The small arteries of the submucosa of the first portion of the duodenum are comparatively few in number, make few anastomoses, and similarly predispose to circulatory disturbances which may lead to thrombosis. Therefore, since the vessels in these regions are liable to be occluded by emboli, it is reasonable to suppose that they are an important factor in the production of ulcer by hæmatogenous infection.

G. S. FOLZES.

Hurst, A. F.: New Views on the Pathology, Diagnosis, and Treatment of Gastric and Duodenal Ulcer. *Brit. M. J.*, 1920, i, 559

The author holds that the shape and position of the stomach are important factors in the incidence of gastric and duodenal ulcer. One type of stomach predisposes to gastric ulcer, the other to duodenal ulcer, if certain exciting causes are present. In the normal stomach, however, these causes are inactive. Duodenal ulcer develops in connection with high-lying, hypertonic stomachs which generally show hypersecretion and empty rapidly. Gastric ulcer occurs in hook-shaped, hypotonic, slowly emptying stomachs which generally show hyposecretion, although in some instances they show hypersecretion.

Erosions and ulcerations are due to the action of the gastric juices on areas of lowered vitality. Bacterial toxins from septic teeth or diseased appendices often are responsible for this reduced resistance. Chemical irritants, such as alcohol, vinegar, and mustard, also may irritate the mucosa to such an extent that its resistance is lowered. Hard, indigestible, insufficiently masticated food rubbing against the delicate mucous membrane causes minute erosions which may be the starting points of ulcers. The author holds that although these various exciting causes are fairly common, they produce ulceration only in persons who have either a hypotonic or a hypertonic type of stomach. The hypotonic or slowly emptying stomach with its high acidity permits exceptionally strong gastric juice to remain in contact with the gastric mucous membrane for an unusually long period. In the hypertonic or duodenal-ulcer type the first part of the duodenum is filled constantly with strongly acid chyme; even when the stomach is empty, undiluted, highly acid gastric juice pours through the pylorus.

There is a class of patients with stomachs of the potential ulcer types who have had moderately severe ulcer symptoms over short periods of time, but

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progress to actual ulceration unless the exciting causes are removed. Septic foci in the mouth and nasopharynx should be eradicated and, if diseased, the appendix should be removed. The patient should masticate his food thoroughly and take

In amphibian metamorphosis the hypophysis is to be ranked with the thyroid. Physiologically they are closely related and to some extent may function vicariously. The results obtained in the experiments reported were due probably to stimulation of the general metabolic processes. The effect is partly progressive (in the skeletal and cutaneous development, due to stimulation of the calcium and phosphorus metabolism) and partly retrogressive (in the development of the digestive tract and tail).

The action of the anterior pituitary substance is probably due not entirely to its iodine content as other tissues containing traces of iodine do not produce the same results.

Recent investigations with amphibian larvæ have demonstrated the following facts:

1 Removal of the thyroid hastens growth, causes hyperplasia of the hypophysis, and prevents metamorphosis.

2 Removal of the hypophysis retards growth, retards development of the thyroid, prevents metamorphosis, and retards the development of cutaneous pigment.

3 Feeding thyroid, hypophysis, or iodine to

larvæ retards growth, retards development of the thyroid, prevents metamorphosis, and retards the development of cutaneous pigment.

6 Feeding iodine to larvæ from which both the thyroid and hypophysis have been removed causes metamorphosis.

SAMUEL KAIN

Teale, F. H., and Bach, E.: The Nature of the Serum Antitrypsin and Its Relation to Autolysis, and the Formation of Toxins in Infection and in Anaphylaxis. *Proc Roy Soc Med*, Lond, 1920, xii, Sect Path, 5.

The authors discuss their subject under the following heads and subheads:

The nature and properties of antitrypsin: the antitrypsin of egg white, relation to lipoids, the isolation and properties of antitrypsin.

Serum antitrypsin: the action of lipoid solvents on dried serum and ordinary serum, the results of endeavors to isolate serum antitrypsin, soaps as antitrypsin agents; inhibition of antitrypsin by acids and alkalis, temperature, incubation, absorption,

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temperature, and absorption of the ferment.

Autolysis of solid tissues: (1) liver: importance of complete bacteriological sterility, effect of reaction, bacteria, phosphorus, and bacterial toxæmia; (2) leucocytes and marrow.

Relation of antitrypsin to tissue autolysis: the existence of a tissue antitrypsin; the influence of

serum antitrypsin in tissue autolysis in the liver, bone marrow, etc.

The relation of these experiments to bacterial

of coliculus, (*) the serum contains a weak proteolytic

gradation in infection and anaphylaxis the authors do not agree with Jobling. G. F. BEHN

Teale, F. H., and Bach, E.: The Relation of the Antitryptic Titre of the Blood to Bacterial Infection and Anaphylaxis, *Proc Roy. Soc. Med*, Lond, 1920, viii, Sect Path, 43.

The authors record their observations on the variations in the antitryptic titre of the blood of animals during various stages and degrees of bacterial infection and anaphylactic shock. In addition they include observations on the alteration in the antitryptic titre of the serum when anaphylotoxin is produced *in vitro*. So far they have been unable to find any records of previous systematic study of these variations, the observations reported being chiefly scattered clinical observations.

In the authors' investigation the changes in the antitryptic power of the blood were determined in:

1 Normal animals infected with or inoculated with (1) non-pathogenic bacteria, (2) heterogeneous non-toxic protein, (3) pathogenic and virulent bacteria; (4) exotoxins; and (5) sensitized bacteria.

2. Immunized animals into which the homologous bacteria were re-injected.

3. Sensitized or immunized animals into which the homologous antigen was re-injected.

Determinations were made of: (1) the variations due to food, phosphorus poisoning, agents destroying antitrypsin *in vitro*, drugs affecting the temperature, drugs damaging blood-forming tissue, and (2) the variation in the preparation of anaphylotoxin *in vitro* and the influence of antitrypsin on the growth of bacteria.

These animals were then subjected to a

curve and the toxicity of a bacterium to the infected animal.

The experiments disproved Jobling's theory that the toxæmia resulting from bacterial infection is due to the formation of toxic processes subsequent to the removal of the antitrypsin inhibition on the plasma autolytic ferments.

Wright's hypothesis that the virulence and consequent infectivity of certain organisms is due to the

of symptoms was nine months in cases of jejunal ulcer and twelve months in cases of gastrojejunal ulcer. Pain on the left side is the most prominent symptom. In all the cases of jejunal ulcer perforation had taken place and the floor of the ulcer was formed by either the mesocolon or the colon. Five of 13 jejunal ulcers had perforated into the colon. The prominent symptoms in such instances are diarrhoea and a low gastric acidity. Bleeding is unusual.

If secondary ulceration is suspected, medical treatment may be tried, but if no relief is obtained shortly, a second operation should be performed. If the ulcer is marginal it should be excised and all suture material removed. If there is contracture of an anastomosis opening, the opening should be reformed, and if jejunal ulcer is present the anastomosis should be excised with the ulcer and both ends of the jejunum implanted separately into the stomach.

It is possible that carcinoma may develop at the site of an ulceration around an anastomosis.

In 389 cases of chronic duodenal ulcer the ulcer involved the stomach in 2 and a separate ulcer was present on the lesser curvature in 7. There were 9 deaths in this series, 3 being those of patients among the 35 operated on for hæmorrhage. The causes of death were continued bleeding from the

treated by gastrojejunostomy with or without involvement of the ulcer. In 2 cases the ulcer was excised; in 1 case simple excision of the ulcer was done. In 5 cases a partial gastrectomy was performed and in 2 a double gastrojejunostomy.

In postmortem observations made in cases in which a gastrojejunostomy for duodenal ulcer had been done the original ulcers were often found healed.

The author has been able to trace 348 of 389 patients after a two-year period. Three hundred and and by partial The after- developed secondary ulceration and in 1 case this was fatal. Two had jejunal ulcers. Eighteen were operated on subsequently and 4 died soon after operation. One died within eight years.

develop from duodenal ulcers but has operated on 9 patients with carcinoma of the duodenum.

The successes following the operative treatment of duodenal ulcer are a little more than 80 per cent. Moynihan reported successes in 82.78 per cent of 305 cases operated upon.

In the treatment of gastric ulcer the choice of operation can be decided only from the factors governing the individual case. In 310 cases of chro-

nic gastric ulcer treated surgically there were 11 deaths.

On the whole, the cases of partial gastrectomy, combined gastrojejunostomy and excisions, and gastrojejunostomy alone have been successful. Three of the patients on whom a simple gastrojejunostomy was done died of carcinoma of the stomach seven, five, and four years after operation. Six of 35 ulcers removed showed carcinoma.

Of 80 patients with hour-glass stomach who were operated on, 4 died. The operations and mortality were: partial gastrectomy, 49 cases, 3 deaths; simple gastrojejunostomy, 26 cases, 1 death, and double gastrojejunostomy, 5 cases, no deaths. All of the patients who survived are well.

Seventy-five per cent of the patients with gastric ulcers who were operated on have remained well for the two-year period.

The author concludes that when the ulcer erodes the pancreas or invades the stomach gastrojejunostomy with excision is the operation of choice in cases of duodenal ulcer, and partial gastrectomy is the operation of choice in cases of gastric ulcer.

J. A. H. MACGOWN, JR

Wendel, A. V.: Some Observations on the Post-operative Morbidity of Gastric and Duodenal Ulcer. *Am. J. Surg.*, 1920, xxiv, 101.

Collective statistical records show an average of 50 per cent of symptomatic failures in operations for gastric ulcer.

changes have taken place that operations of the first magnitude are necessary.

Of 162 cases of postoperative morbidity in ulcer, 112 were operated upon from five to thirty-one years after the diagnosis was made, and 39 immediately afterward. Symptomatic failure in the 39 cases was due probably to premature surgical treatment or insufficient medical treatment. A large

The etiology of gastric and duodenal ulcer is a moot question. The streptococci found in the ulcer tissue bear probably the same relation to the ulcer as they do to tuberculosis. Hyperværg-tonia may be responsible. The cells of the mucosa may be weakened in their ability to obtain antipeptic and antitryptic substances from the blood. The post-operative administration of atropine is therefore recommended. Another factor in the etiology may be a disturbance of the endocrine system.

Autogenous vaccines are of value in persistent ulcer after operation as the micro-organisms retard cicatrization and extend cellular necrosis. Long-continued rest is advisable. After careful treatment by the internist for twenty weeks, the patient is either well or in proper condition for operation.

gastric contents was 94, and the free HCl, 64. Operation revealed a carcinoma of the second portion of the duodenum which involved also the head of the pancreas. A section was removed for examination and a posterior gastro-enterostomy performed. The patient died on the third day from cardiac dilation.

A postmortem examination was done through the operative incision. From the findings it seemed probable that the carcinoma had its origin in the duodenum although the history was similar to that of ulcer.

The frequency and pathology of carcinoma of the duodenum is discussed on the basis of statistics from various clinics.

The article is summarized as follows:

1. Carcinoma of the duodenum is a rare condition. It is found in only 0.033 per cent of hospital autopsies.

2. The percentage of carcinomata of the entire intestinal tract originating in the small intestine varies from 2.5 to 3.1 per cent.

3. The incidence of carcinoma of the duodenum to that of carcinoma of the jejunum and ileum is as 47.7 per cent is to 52.2 per cent.

4. Inch for inch the duodenum is much more apt to undergo carcinomatous change than the jejunum or ileum.

5. The relative frequency of carcinoma in the various portions of the duodenum is as follows. first portion, 22.15 per cent; second portion, 65.82 per cent; third portion, 12.02 per cent.

6. Carcinomatous degeneration is not nearly as frequent in chronic duodenal ulcers as in chronic gastric ulcers.

C R STEINKE

Cade, A., and Devle, A.: Cancer of the Duodeno-jejunal Angle (Cancer de l'angle duodéno-jejunal) *Arch. de. mal. de l'appar. digest.*, 1920, 7, 419

The authors' case was that of a woman 72 years of age.

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hyperperistalsis) and hunger pains which develop several months before the symptoms of stenosis. The gravity of the affection is quite out of proportion to the degree of malnutrition and the growth of the neoplasm.

Stenoses below the ampulla of Vater give rise to two types of symptoms: the one, gastric (duodenal reflux, vomiting, and dilatation), and the other, intestinal (constipation and the signs of occlusion).

reported the cancer was situated for the most part in the jejunum but the peristaltic contractions were normal. The authors believe that the diagnosis of stenosis below the ampulla of Vater is confirmed by persistent bilious vomiting associated with a pyloric

syndrome. Hunger pain, which was a very definite symptom in the authors' case has never been recorded in a case of cancer of the duodenum although it is a classical symptom of duodenal ulcer

W. A. BRENNAN

Heuyer, G., and Leveuf, J.: The Syndrome of Appendicitis and Pseudo-Appendicitis Associated with Dysentery (Appendicitis et syndrome pseudo-appendiculaire des dysenteries) *Arch. de. mal. de l'appar. digest.*, 1920, 7, 385

In the acute amœbic dysenteries the ulcerous lesions of the large intestine are associated with a true and sometimes ulcerative appendicitis. This condition is rarely revealed because its symptoms are masked by the dysenteric toxæmia or by diffuse septic peritonitis.

In the course of chronic recurring dysenteries, both amœbic and bacillary, there is a pseudo-appendicitis syndrome which at first dominates the clinical picture but generally precedes a renewed attack of the dysentery. Such a syndrome appears to be due to the dysenteric ulceration rather than a true appendicitis

If in the course of an acute dysentery the clinical symptoms point clearly to involvement of the appendix, the case is generally beyond aid by medical treatment and immediate operation is indicated. The authors' experience in a number of cases leads them to agree with De Barres who recommends in cases of dysentery, should be proved inefficient, when operation is necessary. In all

Kummer, E.: Acute Appendicitis at the Beginning of the Crisis (L'appendicite aigue au debut de la crise) *Rev. med. de la Suisse Rom.*, 1920, 41, 133

In 30 per cent of the cases of acute appendicitis

barrier the wall of the appendix is invaded by the putrefactive bacteria and may become gangrenous. Gangrene developed on the second day in 46 per cent of the cases, on the third day in 53 per cent, and on the fourth day in 65 per cent. A purulent peritoneal exudate was found in 18 per cent on the second day and in more than 40 per cent on the third and fourth days.

A leucocytosis of 20,000 tends to confirm the diagnosis of acute appendicitis. The course of the condition is generally determined during the first two days and it is only during this short interval that expectant treatment may be employed as a means of arriving at a diagnosis. After this period, temporizing may be fatal

cleansing and excision of the wound and closure of the chest wall

4 The presence of foreign bodies, damaged or infected tissues, or effused blood.

COMPOUND FRACTURES

Cases of compound fracture should be operated upon with the least possible delay. Dirt, devitalized tissue, and blood clots should be removed as in other wounds. In the absence of comminution broken bone should be cleaned and every part of the wound should be thoroughly cleansed and replaced.

The French method of removing comminuted fragments and leaving the periosteum gives good results. The other method of removing all fragments after cleansing was not successful during the war but might be successful in certain types of fractures seen in civil practice.

It is best to delay the closure of the wound until after a few days of sterilization. If sepsis is prevented the results will be successful, but if it is not prevented malunion, non-union, or chronic osteomyelitis is apt to follow. Acute osteomyelitis seldom developed after a fracture of this kind during the war.

M. H. HOBART

LEGAL MEDICINE

Chiropractor as Assistant to Regular Physician.
State vs Young (Mo) 215 S W 2d, p 499

In this case the questions before the court were whether or not a chiropractor is a physician and whether or not an assistant to a regular physician is said to be practicing medicine. The facts were as follows:

The defendant, Young, was convicted of practicing medicine without a license from the State Board of Health and fined \$50.00. On the trial of the case he admitted that he was a chiropractor, but contended that a chiropractor does not practice medicine or hold himself out to be a physician. The court, however, held that such a practice would come under the classification of the practice of medicine. Young contended also that he was an assistant to a regularly-licensed physician and working under his directions, but the court held that he could not escape the effects of the statutes by showing that in practicing he was employed and directed by another.

J. A. CASTAGNINO.

Contributory Negligence of Patient. *Hanson vs Thelan (N Dak) 173 N W 2d, p 457*

The question considered was whether or not the contributory negligence of a patient will relieve the physician from liability for negligence.

The plaintiff brought an action for damages for malpractice against Thelan, a physician, alleging that he so negligently and carelessly treated a fractured limb that erysipelas developed and made

it necessary for the plaintiff to remain in bed for many weeks. The defendant contended that Hanson, against his orders, walked on the leg too soon after the fracture and therefore it was the plaintiff's negligence rather than his own which was responsible for the erysipelas. The lower court entered a judgment for the plaintiff and the defendant appealed.

The upper court held that contributory negligence on the part of the person injured will relieve the party charged with the injury from liability. In this particular case, however, the evidence clearly showed that walking on the fractured limb too soon did not cause erysipelas, and that the negligence of the physician in lacing the boot too tight was the proximate cause. The judgment of the lower court was affirmed.

J. A. CASTAGNINO.

Examination Required to Determine Injury to Eye.
Holton vs Jones (N M) 183 Pac R, p 395

The plaintiff brought an action for damages for injuries to his eye and in the trial of the case exhibited the eye to the jury. The defendant requested the court to order the plaintiff to submit to an examination by three physicians present in the courtroom, but the court refused to enter such an order.

inspection the portion of the body so exhibited becomes an exhibit in the case and can be examined by the defendant. The court further held that if a defendant can employ an expert in other cases he can employ an expert in a personal injury case to determine the nature and extent of the injuries. The judgment of the lower court was reversed and an order for a new trial for the defendant was entered.

J. A. CASTAGNINO.

Hospital Treating White Patient as a Colored One.
Collins vs Oklahoma State Hosp. et al (Okla) 134 Pac., R, p 946

Lee Collins, an infant, was adjudged insane by the court and committed to the Oklahoma State Hospital for the insane. She was a white child born of white parents but was placed in the colored ward and the word "colored" was written after her name on the chart. When her father wrote to the hospital inquiring as to her condition the reply from the hospital mentioned her name with the word "colored" after it. The father of the girl brought an action for libel against the hospital on the ground that the Oklahoma Statutes provide that it is libelous *per se* to write of or concerning a white person as if the said person were colored.

Collins after the name of the child on the chart was not a publication as no one but the agents of the hospital saw the chart. Neither was the letter

times a day is advisable. On no account should an antiseptic be used for irrigation as poisoning is almost sure to follow. Solutions of silver nitrate or protargol may be employed, but the best results are obtained with normal saline solution.

KINGSLEY RENSLOW

Pauchet, V.: The Treatment of Chronic Intestinal Stasis by Total Colectomy (Traitement de la stase intestinale chronique; colectomie totale)
Paris méd., 1920, x, 280

Pauchet has had ten years' experience in the treatment of chronic intestinal stasis by short circuiting the colon. The majority of operations were entirely successful.

Medical treatment is first given a trial as Pauchet believes that for several years chronic intestinal stasis due to changes in the intestinal walls, the formation of adhesions, etc., is purely functional and due to glandular insufficiency. The earlier colectomy is done, however, and the younger the patient the better are the results. Minor operations do not generally give permanently satisfactory results.

For a long time Pauchet did a hemicolectomy but now he prefers a total or almost total colectomy. A right hemicolectomy leaves a splenic kink and frequently a sigmoid kink. The removal of the left half of the transverse colon and the splenic colon makes the end-to-end anastomosis easier. The small intestine distends and becomes transformed into a kind of large intestine.

Pauchet's technique consists of the following stages: (1) a long incision to the left of the median line; (2) exploration of the intestine, stomach, etc.; (3) liberation of the large intestine; (4) ligation of the mesocolon; (5) intestinal resection; (6) end-to-end anastomosis of the ileum to the sigmoid; (7) repair of the mesocolon.

After the suturing is completed it is well to introduce an esophageal drainage tube through the anus as far as the anastomosis. The tube should be sutured to the anus and kept in place for a week.

W. A. BRENNAN

Fasano, M.: A Contribution to the Surgery of the Descending Colon (Contributo alla chirurgia del colon discendente) *Poliedin*, Roma, 1920, xxvii, sez. chir., 61.

In a case of persistent stercoral fistula which had resisted plastic operations the author determined to operate radically and did a left para-rectal laparotomy externally to the fistulous tract. A cicatricial mass composed of omentum and intestinal loops adherent to each other and to the abdominal wall in the vicinity of the fistula was discovered. When these adhesions were freed the descending colon was also found to be adherent to the abdominal walls near the fistula.

After the descending colon had been freed externally and posteriorly and complete hæmorrhage had been secured, the colon was sectioned at the level of the splenic flexure and the entrance into the sig-

moid and removed with the part of the abdominal wall which contained the fistulous tract. It was then possible to approximate the two ends without any trouble. The stumps were united by end-to-end anastomosis. The abdominal wall was sutured in layers and a small capillary drain was inserted. The postoperative course was normal.

In this case the anatomical fixity of the descending colon, which was increased by the mass of adhesions, almost constituted a contra-indication to the procedure adopted. Moreover the author had no technical guide for the anastomosis in a partial colectomy of this kind. It was his plan at first to

believed would be impossible, was effected quite easily.

The only difficulties in an operation of this type are encountered in the splenicocolic ligament corresponding to the splenic angle and the descending mesocolon which contains important vessels. The relation of the operation to the ureters is important but the difficulty in this respect is not a contra-indication to the procedure.

With regard to this type of anastomosis the author discusses the objections raised to the end-to-end type and the general preference for lateral anastomoses. Fasano has adopted the end-to-end anastomosis, basing his choice on the results of certain experiments. He found that after lateral anastomosis a column of water introduced into the intestine from above had difficulty in traversing the canal, the proximal portion of the anastomosed bowel

repeatedly, and Fasano therefore believes that lateral anastomoses hinder the normal peristaltic movements and favor intestinal paralysis. The difficulty of uniting the two intestinal stumps of different diameters may be obviated by making a small incision in the smaller stump and flattening out the angle thus formed.

W. A. BRENNAN

Bevan, A. D.: Carcinoma of the Splenic Flexure.
Surg. Clin. Chicago, 1920, iv, 311

A patient, 50 years of age, complained of loss of weight and strength, diarrhoea, and blood in the stools. The blood was found in the center of the stool. Stomach and duodenal as well as lower rectal rays, No

lings

pointed toward abdominal pathology. At operation a carcinoma of the splenic flexure was found. The mass was about the size of a fist and adherent to all of the surrounding structures.

A Mikulicz operation was then done. The tumor mass was freed from the surrounding structures by cutting the mesocolon, breaking the adhesions, and thus mobilizing the region of the splenic flexure.

GYNECOLOGY

UTERUS

Royster, H. A.: Inguinal Hernia of the Uterus.
South M J, 1920, xiii, 275

During the course of the case of a colored woman 45 years of age, who had been suffering from a large inguinal hernia for many years, it was noted that during her nineteenth year, occurred every twenty-eight days but had always been vicarious, the flow coming from the nose. During her fourteenth year of age a lump appeared in the left groin but gave rise to no symptoms and was therefore disregarded. Not until her forty-fourth year did this mass cause trouble. At that time it increased rapidly in size in a period of twelve months and its growth was associated with pain and discomfort.

Examination revealed a swelling in the left inguinal region the size of a man's fist—hard, tender, irreducible, and only slightly movable. The vagina was normal but no cervix presented. On bimanual palpation no internal pelvic organs could be made out.

Operation revealed a hernial sac containing a large, hard, tender mass. The mass was found to be the uterus, which was found to be the size of a man's fist, and showed complete absence of the right tube, ovary, and broad ligament.

The author follows this case report with a review of the literature, referring first to Cranwell's collection of 17 cases of inguinal hernia of the uterus. Royster group of 10 cases, 1 of which was a bilateral inguinal hernia. In 2 of the hernia were in the femoral ring, 1 in the obturator foramen, 3 at the umbilicus, and 10 in the inguinal region. Nearly all of the inguinal hysterectomies were on the left side, this being explained by Oge as due to the fact that the volume of the uterus was less on the left side and the uterus had descended early when the canal of Nuck was most widely open. Makkas pointed out the striking frequency in all forms of herniated uteri of associated malformations of the genitalia, chiefly the bicornate or bipartite uterus and often an associated vaginal atresia. The case reported by Makkas was that of a woman with a bilateral inguinal hernia, each hernial sac containing a small uterus. This frequency of associated genital malformations and hysterocoele indicates an etiological connection between the two conditions.

CAREY CULBERTSON.

Wilcox, D. G.: Supporting the Pelvic Floor to Prevent and Overcome Uterine Prolapse.
Boston M. & S. J., 1920, clxxiii, 425

The author considers only the prolapse which occurs at or near the menopause. This condition develops especially in two classes of women: (1) those who have had large families and who have worked very hard lifting heavy weights, and (2) those who are in better circumstances and take on weight as the menopause approaches. In order to appear well such patients increase the intra-abdominal pressure by wearing tight corsets and in this way the prolapse is produced.

Before prolapse is possible there must be a relaxation of the sacro-uterine ligaments and the levator ani in addition to a relaxation of the round and broad ligaments.

In the treatment the first step is the repairing of the perineum with special attention to the levator ani. The next step is a subtotal hysterectomy with removal of both ovaries and tubes, the ends of the ligatures on the round and broad ligaments being left long. The third step is the insertion of four chromic catgut sutures through the stump of the cervix. Into these sutures the stumps of the broad, the round and the sacro-uterine ligaments are tied. The small raw surface remaining is covered with the flap of peritoneum dissected from the anterior wall of the uterus. If it is advisable to remove the cervix the six ligaments may be inserted into the vaginal vault in the same manner.

The author has performed this operation 156 times (63 panhysterectomies and 93 subtotal hysterectomies). The one death and two recurrences in

Pust, W.: Vaginal Shortening of the Round Ligaments with Vaginofixation (Vaginale Baenderaufzug mit Vaginofixtur). *Arch f Gynaekol*, 1920, cxvi, 89

Pust favors the vaginal operation for retroversion, but of course does not employ it for nulliparae. He recommends a combination of the Menge-Dudley shortening of the round ligaments with intraperitoneal vaginofixation which he has used in 64 cases, the oldest dating back five years. Forty-one of these patients have been re-examined. Failure resulted in only 1 case. The value of these statistics is limited, however, on account of the recent date of some of the operations. The technique used was as follows:

Anterior colpotomy. Transverse opening of the phica. Elevation of the uterus with a thick, acutely

Usually it develops much later, in some cases after a lapse of years

The syndrome as a rule consists of fever, enlargement of the liver, and liver pain, although any one of these symptoms may be absent. Frequently also a condition known as "liver abscess facies" is observed. The skin is pale and yellowish, the face is emaciated, the eyes are deeply sunken, and the sclera are waxy and subicteric.

While fever may be absent occasionally, it is seldom absent entirely. It is not characteristic in its type or course, but usually is not high and tends to rise in the evening. It may be intermittent like that of malaria, but a point in the differential diagnosis from malaria is the absence of enlargement of the spleen in cases of liver abscess. At the time of onset, the fever is not infrequently associated with chills. The occurrence of chills later suggests the formation of new abscesses.

Enlargement of the liver is always present in cases of solitary liver abscesses. In cases of small

forward. When the abscess is very large, pressure on the portal vein may cause ascites. Often there is bulging of the lower intercostal spaces on the right side of the thorax.

Spontaneous liver pain and pressure pain are also of importance in the diagnosis. These pains vary greatly in intensity, are often localized, and the right shoulder

blade. When it lies well in the middle of the right lobe, pain often results from deep pressure in the intercostal spaces. A perihepatic friction-rub also aids in the localization.

Another symptom is interference with respiration due to reflex immobility of the diaphragm, inflammatory paralysis, mechanical compression of the lung, or a secondary pleural effusion.

A decided leucocytosis is almost always present, the count being ordinarily between 15,000 and 20,000.

In the treatment diagnostic puncture should be done only when it can be followed immediately by operative drainage. Because of the danger of infection, hemorrhage, and injury to a viscus or large vessel, it should not be done on the anterior surface or in the left lobe. If in an exploratory laparotomy the abscess is found in the usual location the puncture may be made in an area bounded anteriorly by the anterior axillary line, posteriorly by the posterior axillary line, and above by a line not over 2 in. above the costal margin. The subsequent operative opening should be made high up as the liver contracts during the course of healing.

In case the needle has penetrated the diaphragm before reaching the pus, as in subphrenic abscess or liver abscess, it will be raised by the diaphragm at each inspiration, whereas if the condition is empyema or lung abscess, this does not occur.

Regarding the prognosis of liver abscess not operated upon, the author states that small abscesses heal by such healing is

open operation and perpleural or parapleural drainage or drainage effected by abdominal laparotomy or, rarely, by lumbar incision. The first two methods are probably the most generally used and the operation may be done under local anesthesia. J. W. BACR.

Barron, M.: Abnormalities Resulting from the Remains of the Omphalomesenteric Duct; Report of Two Cases. *Surg., Gynec. & Obst.*, 1920, xxx, 350

A case of umbilical polyp lined with intestinal mucosa and a similar specimen found at autopsy are reported with a résumé of the literature.

The patient, aged 5, had a persistent discharge from the umbilicus which began shortly after birth although nothing abnormal was noted at the time the cord was separated. On examination a small polypoid mass of granulation tissue was found. This mass had no opening and the discharge which covered it did not contain feces or urine. The mass was excised and the wound healed promptly.

Microscopic examination showed an internal core of irregular bundles of smooth muscle fibers and connective tissue and a peripheral or glandular zone resembling the mucosa of the intestine.

The specimen obtained at autopsy showed a narrow Meckel's diverticulum with a thick, cord-like attachment to the abdominal wall near the umbilicus.

The article is summarized as follows:

1. Umbilical inclusions of remnants of the omphalomesenteric duct are not at all uncommon. Most of the "umbilical granulomata" are probably structures of this type.
2. Umbilical polypi presenting gastric mucosa undoubtedly originate in remnants of the omphalomesenteric duct rather than in gastric diverticula. The histological and functional characteristics of these anomalies are probably determined by the stage of foetal development during which the constriction occurs.

3. The milieu is an important factor in determining the type of cells called forth by any given stimulus. P. M. CHASE

Tierney, J. L.: Pneumoperitoneum. *J. Missouri State M. Ass.*, 1920, xvii, 137

After giving a résumé of the literature the author describes the procedure he himself uses to induce pneumoperitoneum for the study of intra-abdominal conditions.

His conclusions regarding pneumoperitoneum are as follows:

1. The technique is exceedingly simple. The requirements are an adequate apparatus, a proper needle, surgical cleanliness, local anesthesia, and care to prevent puncture of underlying viscera.

not or will not remain in bed, so that it is usually necessary to treat her as an ambulatory case. At the dispensary of the University Hospital such patients are given two prescriptions, one for santal oil to be taken in 10 minim doses three times daily, and the other for a urinary sedative containing 5 minims of tincture of hyoscyamus and 10 gr. of sodium bromide to 1 dr. of the liquor of potassium citrate to be taken every three hours. The patient is instructed to drink water freely and return in a week. If at that time, the acute inflammation persists, the treatment is continued in the same manner.

In the course of two or three weeks a marked improvement will usually be noted, evidenced by freedom from symptoms and diminution or disappearance of the urethral discharge. It is at this time and not until then that local treatment should be instituted, and when it is begun, the patient should be warned that freedom from symptoms does not mean freedom from disease. Many agents have been tried in the local treatment of urethritis, but Block has come back to the use of silver prepara-

ment and the urethra should be dried with a wisp of cotton on an applicator. This drying is important as it greatly increases the power of the gonococidal agent. The entire urethra should then be painted with the silver solution on another cotton slow spiral bed. The cotton becomes tightened instead of loosened.

ACUTE ENDOCERVICITIS

In gonorrhoeal endocervicitis not so rapid improvement following treatment can be expected as in urethritis. Nevertheless, conscientious and continued treatment will give results far above the

ordinary care is used, many of the objectionable features of permanganate can be obviated. The drug should be ordered in the form of 1-gr. tablets and these should be dissolved just before use. As soon as the discharge is well under control, ordinarily in about two weeks, local treatments to the

into actual contact with the infecting organisms in the cervical glands. Therefore, to obtain the best results, it has been the author's practice to expose the cervix by means of a bivalve speculum, wipe away the major portion of the discharge, and then thoroughly spray the cervix with an alkaline solution in order to dissolve the mucus. He then dries the cervix and passes an applicator soaked in an alkaline solution (liquor antisepticus alkalinus) into the canal as far as the internal os, moving it to and fro. After this he passes a dry cotton swab into

the characteristic yellow color produced.

Not infrequently the patient will complain of cramps in the lower abdomen when the tincture of iodine is applied. This is merely a uterine colic due to the stimulation of the muscle produced by the iodine fumes and need cause no alarm as it will disappear in a minute or two. Following this application, the cervix and cul-de-sac should be thoroughly dried and the speculum withdrawn. Only in very exceptional cases is the insertion of a tampon necessary.

The patient should continue the douches at home and report to the office for treatment two or three times a week for the first three weeks, after which time the condition is usually so greatly improved that the douches may be discontinued and the

of five times daily. Block has found this solution to have the best cleansing effect in these cases. If

charged

C. H. DAVIS

has found the source of the toxin. When necessary, the pathologist, the internist, the genito-urinary specialist, the gastro-enterologist, the radiographer, the laryngologist, and the dentist should be called into council.

Increased knowledge of internal medicine and investigations which have thrown new light on systemic diseases with local and remote manifestations have led the clinician to assist as far as possible in working out a better understanding of these conditions.

Heretofore it has been the custom to treat symptoms occurring in definite parts of the body by local methods. In more recent years it has been discovered that these local symptoms are often only remote manifestations of a blood-stream infection having its source in some area of putrefaction. Chief among such areas are: (1) the throat, (2) the mouth, (3) the alimentary canal, and (4) the genito-urinary tract.

The principal conditions of the throat which give rise to blood-stream infection are hypertrophy and ulceration of the tonsils and adenoids. All the diseases of the middle ear and mastoid, meningitis, intracranial abscess, sinusitis, etc. are traceable directly to the throat. Tuberculous glands of the neck are now removed only after the tonsils have been operated upon as a possible source of infection. Mouth breathing, a consequence of throat or nasal obstruction due to enlarged tonsils and adenoids, results in anæmia, chlorosis, endocarditis, endarteritis, tuberculosis, and general systemic toxæmias.

The principal disease of the mouth, the most frequent source of systemic infection, is pyorrhea. This may result in sore and painful joints, arthritis deformans, endocarditis, intestinal indigestion, loss of teeth, anal disease, alveolar abscess, osteomyelitis, neuritis, neuralgia, glandular enlargement, endarteritis obliterans, and painful feet.

The alimentary canal may be a source of systemic infection because of constipation or intestinal stasis which results in the accumulation of faeces and putrefactive changes. Intestinal ulcers, appendicitis, affections of the gall-bladder, the liver, the mesentery, and the portal circulation, and systemic conditions, such as headache, anæmia, etc., are all traceable to this condition.

In the genito-urinary tract occur a great number of serious and fatal secondary infections. The primary cause is gonorrhoea followed by urethritis. Secondary conditions which are apt to develop are stricture of the urethra resulting first in perineal fistula and finally in complete occlusion, retention of urine, and uræmia. Chronic urethritis sometimes leads to chronic prostatitis which may have grave complications such as deep perineal abscess. Systemic infections from chronic genito-urinary diseases are acute and chronic gonorrhoeal arthritis. In the majority of cases this leads to ankylosis and permanent deformity of the extremities.

G. E. BEILEY.

Roberts, P. W.: Syphilitic and Tuberculous Joints. *Am. J. Syphilis*, 1920, iv, 309.

Roberts draws his conclusions from more than two hundred bone and joint cases. His contentions, supported by those of others, are that the symptoms of syphilitic and tuberculous joints are so similar that it is often difficult to differentiate the two conditions definitely. "The X-ray may show a bone lesion in either disease, but, contrary to accepted theories, there are usually no definite characteristics upon which to base a diagnosis." The author's study demonstrated also that in the late manifestations of inherited lues the Wassermann test is extremely unreliable.

In the cases reviewed the results of treatment were not often prompt. The author believes that this fact was due to the slower or oral method of drug therapy which was employed. Frequently when the medication was omitted too soon after the disappearance of the symptoms a relapse occurred but when the administration of the drugs was resumed the response was quick.

Roberts emphasizes particularly the importance of adapting the treatment to the requirements of the individual case. Local treatment is also of importance. In tuberculosis the plaster cast should be used; in syphilis, the ordinary splint.

It is unwise to make a diagnosis of joint tuberculosis until the possible presence of inherited syphilis has been eliminated by five or six weeks of vigorous antiluetic treatment.

The article gives 15 case reports.

A. R. HOLLENDER.

Thevénot: Complications of Torsion of the Knee (Les complications de l'entorse du genou). *Rev. de chir.*, Par., 1919, vii, 942.

Complications which may follow torsion of the knee may involve the ligaments, the synovia, or the meniscus, according to the structures injured. Usually the knee is twisted inward and there is dragging on the upper insertion of the internal lateral ligament.

Torsion of the knee they are almost always due to an inward twist. It is the internal meniscus which is generally involved by meniscitis or luxation as the inward twist of the knee occurs most frequently and the internal lateral ligament constitutes the principal fixation of this meniscus.

The majority of the complications may be cured by orthopedic treatment. W. A. BRENNAN.

Hutchins, C. P.: Weakened Foot: Its Measurement and Correction. *Med. Rec.*, 1920, xcvi, 681.

Weakened foot results from increased body weight or weakness of foot muscles which have been overstretched by malposition of the various bones, improper shoes, or improper walking.

In cases of fracture of the lower limb it is not wise to allow the patient to walk, even with crutches, until firm union is obtained. G. S. FOULDS.

Orr, H. W.: Points To Be Observed in the First Ten Days of the Treatment of Compound Fractures. *J. Orthop. Surg.*, 1920, ii, 196

In cases of fracture immobilization is of secondary importance to correct position but both are essential for successful results. The promotion of bony union by rubbing the ends of fractured bones together is not advisable.

Military experience taught that the simplification of apparatus made it possible for large numbers of surgeons to do excellent work in a short time.

Plaster of Paris applied by the Whitman method is of value in fracture of the neck of the femur.

During the war patients with fracture of the humerus which in many instances involved the elbow were sent to the hospitals with the arm in a straight Thomas splint, the elbow being straight and the hand pronated. In many of these cases neither normal relationship nor immobilization had been obtained. Following the teaching of Jones, the rule was then made that every fracture of the humerus was to be taken out of its straight Thomas splint, the elbow flexed and the hand supinated and dorsiflexed. The only exceptions to the supination of the hand were the few cases of patients who expected to be employed later in work which required the hand to be held with the palm downward on a table. After such manipulation the hand was fixed in plaster of Paris, often with a body cast, or carefully bandaged into a Jones humerus traction splint or an aeroplane splint.

The Thomas splint should always be applied in the same manner. Individual methods invariably lead to a loss of efficiency as patients pass from one surgeon or hospital to another. In the application of this splint to fractures of the leg the following points must be observed:

A long splint with a well-fitting ring must be selected. It must be bent to an angle of 10 or 15 degrees at a point 1.5 in. above the level of the knee joint. With regard for the wounds, the adhesive traction bands must include as much skin of the leg and thigh and extend as high as possible. The traction ropes for twisting attached to the lower end of the adhesive should be of 0.25 in. rope or 4-ply

muslin fastened very securely into the adhesive so that it will not give way under a pull of even 15 or 20 lbs. Muslin hammocks not more than 4 in. wide should be placed across the splint for its entire length at a sufficient tension so that the leg rides well on top of the splint. The splint should then be applied and the traction straps tied firmly over the lower end, the ring tight against the tuberosity of the ischium. A right-angle foot-piece should be applied next and the foot and knee bandaged in such a way as to put the entire extremity at rest in the splint. The twisting of the traction bands should have attention once or twice daily. The lower ends of the splint should be tied to the outer end of the foot of the bed in such a position that the lower end of the femur rotates slightly outward. The foot of the bed should be raised 12 in. so that the patient's body acts as a counterweight.

The author expresses the hope that the four or five standard splints used by the A. E. F. will come into general use in this country and that most of the other methods and forms of apparatus will be discarded. L. C. DONNELLY.

Lemon, C. H.: Suggestions for the Treatment of Fracture of the Radius and Ulna at the Middle Thld. *Wisconsin M. J.*, 1920, xviii, 463

Next to fractures of the hip, fractures of the middle third of the forearm are the most difficult to treat. Since the relation of the flexors and pronators to the extensors and supinators is as 3 is to 2, a loss of balance results from a fracture of this kind, the flexors becoming the bowstring which tightens from day to day and shortens the line from the palm to the elbow.

The treatment must include fixation of both the wrist and the elbow to be used for extension. The position of full supination, not semi-pronation as the text-books advise, must be used. Plaster of Paris gives the best fixation and should be doubly reinforced at the point of fracture. After the acute swelling has disappeared the arm should be fixed in overcorrection as otherwise outward bowing will take place within the cast.

The retentive dressing must not be removed too early. For the first few days ordinary coaptation splints should be used with double padding opposite the site of fracture to secure overcorrection. These need not extend above the elbow. R. G. PACKARD

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Sandiford, I.: The Basal Metabolic Rate in Exophthalmic Colter (1,917 Cases), with a Brief Description of the Technique Used at the Mayo Clinic. *Endocrinology*, 1920, iv, 71.

The author defines the basal metabolic rate of an organism as "the minimal heat production of the

organism from twelve to eighteen hours after the ingestion of food and with that organism at complete muscular rest." This rate may be estimated by direct or indirect calorimetry, the latter being an analysis of the end products of oxidation within the organism.

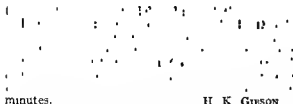
The author reviews the investigations on the subject from the research of Lavoisier to the present

for if the clot is well-formed the shot will be found enmeshed in the fibrin and does not roll or rotate, while in a poorly formed clot or one in which there is retraction it continues to roll.

An effort was made to check all sources of error. Watch glasses of the same size and curve were used in order to standardize the surface area of the drop in contact with the glass. The inverted glass minimizes the drying of the drop and prevents the entrance of dust and lint. The greatest source of error arises in the blood flow. A small, slowly-forming clot obtained by pressure clots very quickly. The depth and extent of the cut do not influence the clotting as long as the flow of blood is free and occurs without pressure.

The time was reckoned from the moment the first drop fell. The time consumed in the formation of the second clot was considered a part of the coagulation time. Determinations were made to the nearest half minute. No claim is made for absolute clotting time but the result gives at least a clean cut relative time for comparative work. It is not regarded as of importance to determine whether the clot forms in six minutes or six minutes and forty-five seconds, but it is important to determine whether it forms in six or sixteen minutes.

The method described was checked with that of Lee and White with blood obtained from the superior longitudinal sinus of the same infants. The average time, which was the same by both methods was seven minutes. The average coagulation time in the cases of 126 new-born infants in the first twenty-four hours of life was seven minutes, with an arithmetical deviation of one and one-half minutes. This gives an approximate range of from five and one-half to eight and one-half minutes. Eighty per cent of the determinations fell within this range and 95 per



H. K. GIBSON

Creadick, A. N.: The Frequency and Significance of Omphalitis. *Surg., Gynec. & Obst.*, 1920, xvi, 278

An inflammatory exudate in the umbilical cord

both syphilis and omphalitis were present in 3 cases.

Generally the lesion consists of an extravasation of polymorphonuclear leucocytes into the wall of the umbilical vein, less commonly, into Whar-

ton's jelly, and occasionally into the walls of the arteries. Bacteria are associated with the lesion and evidently reach the umbilical cord from the placenta so that the initial pathologic process is a placental bacteremia.

Cases of omphalitis are usually attended with fever during the course of labor and premature rupture of the membranes. Vaginal examinations during a prolonged labor favor the development of the condition. Omphalitis was observed in about 2 per cent of a series of 2,300 cases and was responsible for 14 fetal deaths. There were no maternal deaths in the series. The frequency of the infections and the resulting infant mortality may be reduced by substituting rectal examinations for vaginal examinations.

MISCELLANEOUS

Davis, E. P.: Prenatal Care from the Viewpoint of the Obstetrician. *Therap. Gaz.*, 1920, xlv, 233

It is in the toxæmia of pregnancy that the care of the mother during gestation is especially important. In the majority of cases of pregnancy toxæmia can be prevented by proper care. A physical examination should be given at regular intervals and should include a determination of the pulse tension, an examination of the heart, the circulation, and the urine. Often the blood should be examined also. A month under hospital care in the early portion of the pregnancy, or before the confinement, will often be found of the greatest value.

Pure food and water, care of women working in shops and factories, proper warmth in winter and escape from excessive heat in summer are all important factors. The prevention of toxæmia is far more difficult than its treatment. Additional hospital space is needed so that pregnant patients can be placed in separate wards where they will not be annoyed by confinement patients or infants and where they will have the best hygienic surroundings.

conditions, however, are exceedingly important. Hospital treatment is essential.

without injury. While the need for such supervision is today not as it was during the period of the war, the subject demands intelligent study and the co-operation of medical, civic, state, and national authorities.

The malignant portion showed the typical histologic character of a glandular cancer. The exact point at which the carcinoma began could not be determined but there was a relatively large transitional zone in which the intermediate changes be-

growth than those in the remaining portions of the tumor. The cells were more closely packed and formed invaginations which often made the lumen

ed. These cells multiplied by amitotic division. No mitotic figures were observed.

At certain points a modification which seemed to represent a malignant tendency was manifested by the stratification of the cells into two or three layers. The lamina of the cells next to the lumen usually conserved its typical glandular type while the underlying cells changed so that there was no indication of their original function. The stratification

deeper cells lost their glandular characteristics and reproduced undifferentiated epithelial cells not of the glandular type. They thus assumed new histological characteristics which allowed them to proliferate rather than to functionate.

The cells in the cancerous portion differed greatly from the glandular type. In the adenoma the cells multiplied by cleavage and there were no mitotic figures in the transitional zone. In the malignant portion, however, mitotic divisions were quite num-

erous. It was thought to permit proliferation but not to provoke it. This theory has been adopted as the result of a series of investigations by Champay in which it was found that cells so differentiated that they did not divide by mitosis exhibited active proliferation when cultivated *in vitro*. A large series of observations demonstrated that mitotic multiplication was impeded *in vivo* by certain influences which are as yet undetermined, but that the tissue elements really possessed the ability to multiply indefinitely. In neoplasms there is a condition permitting the renewal of cell multiplication, the neoproliferation being explained upon the basis of a suppression of inhibition rather than an excitation.

In the cancerous glands the inner or superficial

were no notches, and chromatin was arranged in two or three masses. The nucleolus was usually quite distinct. The cytoplasm was finely granular and contained no mucus nor mucogenic substances. The

outlines of the glands were irregular and varied greatly in size. Cell groups could be isolated in the connective tissue or appeared in trabeculae. Pluripolar mitoses were seen in these cell groups. The connective tissue between cancerous glands was not infiltrated by leucocytes except in the areas undoubtedly infected. The infiltration of eosinophiles so abundant in the non-cancerous portion was absent in the malignant area. The epithelial margin enclosing the entire polyp exhibited no deviation from the normal structure except that in certain areas it was broken.

In view of the infrequency of the kind of cancer described it was decided to cultivate it in plasma immediately after the operation. Portions of the tissue were taken first from the highest point as it was believed that the whole tumor was malignant. These implants were therefore obtained from the non-cancerous portion. Cultures of the cancerous portion taken later continued multiplication with

malignant tissue

A series of fragments were implanted and examined at intervals varying from one to eight days. During the first day the glandular epithelium changed its aspect completely. The cells lost their mucous character and became cuboidal in type. In general this may be termed the loss of specific organic character with conservation of epithelial nature. The form of the nucleus changed also, becoming more spherical and staining more lightly. The connective tissue showed a tendency to centralize, the epithelial

was observed during the first two or three days of culture. Later the epithelial cells underwent curious modifications resulting in the formation of cilia which finally covered the entire free surface of the cells in a fine fringe. This formation began at the surface of the most superficial cells with the largest mass of cytoplasm. The connective tissue did not undergo important transformation. Vessels became obliterated and disappeared. In the periphery of the sectioned fragments were found bits of connective tissue extending out from the epithelium. Continued epithelial proliferation finally resulted, however, in the enclosure of such protrusions. After small protrusions were thus covered, stratification began, the deeper cells assuming the characteristics of malignancy. Proliferation then continued by mitosis. Isolated epithelial elements proliferated in circular form, later becoming stratified and resembling the cell nests of a cancer.

In conclusion attention is called to the similarity of the epithelial tumor and cultures from the tissue from which the tumor was derived. In both there was partial loss of differentiation. This parallelism does not mean that the cause is identical in the two cases but that the mechanism of genesis of atypical

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

McKinlay, C. A.: Epithelial Hyperplasia in Congenital Cystic Kidneys. *J. Urol.*, 1920, IV, 195

A review of the literature shows that most authors regard congenital cystic kidneys as a malformation or non-growth. Few have attempted the

tory effort by the healthy parenchyma of an organ whose efficiency has been handicapped by malformation."

reports of cases of compensatory hyperplasia in the kidney

FRANK HIXMAN

Jacobson, V. G.: Pyelitis et Ureteritis et Cystitis Cystica. *Bull. Johns Hopkins Hosp.*, 1920, XIII, 122

The term "ureteritis chronica cystica polyposa," was introduced by Litten in 1876. His patient was a man, aged 75 years, who had small, shrunken kidneys and a dilated right ureter which was studded with cysts and contained a calculus. The right kidney was hydronephrotic. Microscopically the walls of the ureter were thin and highly vascularized. The cysts contained many free nuclei and masses resembling giant cells with irregularly distributed bodies resembling nuclei.

Following Litten's contribution, over 50 cases of ureteritis cystica have been reported, the greater number by European pathologists, particularly French and German. The Germans have given the most complete descriptions, however, and have attempted to explain the pathogenesis of the con-

three cases in as many weeks. In this article he reports these three cases in great detail, giving autopsy and microscopic diagnoses. His study he summarizes as follows:

The condition described was a cystic inflammation of the pelvis, ureters, and bladder.

It occurred in persons of either sex and 95 per cent of the cases were those of senile, arteriosclerotic persons who had a history of urinary inflammation or other disturbance.

Two of the patients whose cases are reported in this article in detail had had prostatic trouble, and the third, bilateral pelvic calculi. One had a double ureter.

The pathogenesis of the condition is described as follows:

1. In the aged arteriosclerosis of the ureteral and vesical arteries is followed by muscular atrophy, fibrous myositis, and loss of elastic tissue which may lead to atony of the ureter and bladder.

2. By the marked infolding of the mucosa with fibroplasia in the tunica propria many cell nests of von Brunn are formed.

3. An inflammatory irritant, usually from the

cells

4. The same irritant produces moderate proliferation of the isolated epithelial cells followed by central degeneration and fluid transudation, thus giving rise to microscopic and macroscopic cysts.

In view of the large number of cell nests of von Brunn in the ureter and bladder of senile persons and the high incidence of urinary tract infections in the aged, the author believes that cystic inflammation of the urinary tract is relatively common in this class of patients.

G. E. BEILBY.

BLADDER, URETHRA, AND PENIS

For

which has been made has demonstrated principally cylindrical epithelial and calciform cells, tracts of mucosa somewhat similar to that of the intestines, and epidermal transformation of the epithelial cells of the mucosa.

The facts reported in most cases were such that the alterations in the mucosa might be attributed to external agencies and operative manipulations on patients not in their early infancy. In the histo-

Krehbiel, O.: On the Calcium Content of the Blood with Special Reference to Cancer. *J. Cancer Research*, 1920, v, 199.

The calcium content of the blood plasma was determined by the author in 34 cases of malignant disease, in 6 cases of benign tumors, in 11 cases of thrombo-angiitis obliterans, and in 26 miscellaneous cases. The method employed was that of Halverdan and Bergeim.

In normal persons the calcium content varied from 9 to 11 mgm. per 100 ccm.

In cancer, the average values were within the figures generally accepted as normal, i. e., 9.41 mgm. per 100 ccm. No characteristic concentration was associated with any given type or location of neoplasm.

In benign tumors the values were similar to those obtained in cancer.

The average calcium figure for thrombo-angiitis was within normal limits, while the variations in individual cases indicated that calcium metabolism is not affected by this disease.

In severe nephritis, eclampsia, and tetany, low calcium values were obtained. SAMUEL KAHN.

BLOOD AND LYMPH VESSELS

Behan, R. J.: Physiological Methods in the Treatment of Varicose Ulcers. *Am J Surg*, 1920, xxiv, 126

Varicose ulcers are the result of circulatory stagnation due to some obstruction in the internal saphenous or femoral vein. The normal valvular action is overcome with resulting engorgement and passive congestion of the leg.

To correct this condition the circulation to and from the ulcerated area must be corrected. The author advises making numerous straight incisions about the area and severing the vessels communicating beneath the ulcer by means of a fine narrow knife.

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 nutrition, i.
 is situated, is immune to the pus secretions of the area, possesses great resistance, and is not sensitive.

The author's method of treating varicose ulcers is described as follows:

1. The ulcerated area is made as aseptic as possible and the granulation tissue is removed below the level of the margin.
2. The skin margins are undermined, the bleeding being controlled by pressure.
3. Squares measuring $\frac{1}{4}$ in. are cut from the margins at distances of $\frac{1}{4}$ in. These are placed over the ulcerated area not more than $\frac{1}{2}$ in. apart, pressed firmly to the surface, and covered with a protective elevated dressing.
4. The area is kept moist with salt solution or Ross' solution, and is protected from pressure and

verin". Theobromine also acts as a stimulant to cell growth. Ross uses a paste and a solution the formulae of which are as follows:

Solution: Sodium chloride, 0.5 gm., sodium citrate

bicarbonate, 1 gm., and water 100 ccm.

M. H. HOBART

GENERAL BACTERIAL INFECTIONS

Huggins, R. R.: Postoperative Tetanus. *Surg, Gynec & Obst.*, 1920, xxx, 142

Huggins states that in a considerable number of cases of postoperative tetanus reported the condition occurred after a pelvic operation and that this fact makes the subject worthy of attention on the part of the gynecologist.

A study of the histories of these cases and of the various theories regarding the etiology of the complication has led the author to the following conclusions:

Tetanus is a complication which may follow any operative procedure but is more apt to follow abdominal and rectal operations.

More thought should be given to the possibility of its occurrence and because of this possibility green vegetables should be excluded from the diet for several days before an abdominal operation.

At times water may be responsible and therefore should be carefully examined. Catgut may be another factor in the etiology.

Huggins reports a case which he believes was tetanus although the clinical diagnosis made from typical symptoms was not proven bacteriologically. The patient was operated upon for a uterine fibroid.

typical symptoms of tetanus

There was no evidence of any local infection; the wound healed by primary intention. Cultures of the secretions from the vagina, the wound, and the

SURGICAL DIAGNOSIS, PATHOLOGY, AND THERAPEUTICS

Nammack, C. H.: The Significance of Yellow Spinal Fluid. *Am. J. M. Sc.*, 1920, cliv, 540.

Frain, in 1903, described a syndrome in which the spinal fluid is of a yellow color, contains a marked increase in cells and albumin, and coagulates at once

In the author's opinion the ulceration is due to a non-tuberculous infection but infectious in the tonsils, teeth, and sinuses are not etiological factors. In some cases the urine is sterile. The clinical and pathologic findings suggest the possibility of a primary paracystitis, the changes found in the bladder being secondary.

After using local applications Keene has come to the conclusion that the only adequate treatment is complete excision of the inflamed area. The extent of the excision should be determined by the extent of the œdema rather than the extent of the ulceration.

In the cases reported the patients who were operated upon were cured and after varying lengths of time the capacity of the bladder became normal

G. I. THOMAS

Ballenger, E. G., and Elder, O. F. The Management of Tumors of the Urinary Bladder. *South M. J.* 1920, VIII, 279

In practical work with the new growths of the bladder there are three well-recognized groups (1) benign papillomata, (2) malignant papillomata (which sometimes may appear benign when viewed with the cystoscope, but microscopically are malignant and unlike the benign growths, may fail to respond to the high frequency current), and (3) papillary carcinomata and sarcomata which infiltrate the bladder wall.

There is but one symptom which is sufficiently constant to be of any value in the diagnosis, viz, hæmaturia. If there is no readily assignable cause for hæmaturia, such as inflammatory processes, traumatism, or tubercle, it is of little value.

most profuse hemorrhage from the bladder the authors have seen came from a benign papilloma not larger than a pea. The diagnosis of the neoplasm is confirmed when the growth is seen through the cystoscope.

If the patient is unclear as to what the nurse is doing, the nurse should explain the procedure and the purpose of the procedure.

1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

the 1990s, the number of people in the world who are illiterate has increased by 100 million. The number of illiterate people in the world is now 1 billion. The number of illiterate people in the world is now 1 billion.

the 1990s, the number of people in the United States who are 65 years of age or older is projected to increase from 20 million to 30 million, and the number of people 75 years of age or older is projected to increase from 10 million to 15 million (U.S. Census Bureau, 1996).

with heterogeneous distributions of α and β values.

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1. *Journal of the American Medical Association*, 1997; 277: 1033-1036.

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Lichtenthaler and Whistler (1973).

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Isomorphism ρ is given by

Journal of Management Education 30(6)

11. *Journal of the American Medical Association*, 1990; 263: 1001-1005.

1. The first group of variables is the set of variables that are used to define the population. These variables are the ones that are used to identify the population of interest. In this case, the variables are the age, sex, and race of the individual.

1. *Chlorophyll a* (Chl *a*)

the 1990s, the number of people in the United States who are 65 years of age or older is projected to increase from 20 million to 30 million, and the number of people 75 years of age or older is projected to increase from 10 million to 15 million (U.S. Census Bureau, 1996).

between malignant and non-malignant growths the

between malignant and non-malignant growths the principal point is the infiltration of the bladder wall

principal point is the infiltration of the bladder wall as determined by the instillations.

as determined by the cystogram

The author emphasizes the importance of impressing the medical profession as well as the public with the fact that blood in the urine demands a cystoscopic examination. Cystoscopic examinations done early in such cases will undoubtedly save many lives.

V. D. LESPINASSE

V. D. LESPINASSE

Sieben, H.: Disturbance of the Bladder in Myelodysplasia (Die Störung der Blasenfunktion bei Myelodysplasia). *Deutsche med W'chenschr*, 1920, **xvii**, 72.

The frequency of enuresis during the war has aroused a new interest in the question as to how often the trouble is of purely functional origin and how often it is due to organic lesions. In a series of cases the author has been able to determine that spina bifida occulta with the always associated myelodysplasia is a frequent cause. The diagnosis of spina bifida in these cases was made on the basis of a shallow depression in the region of the upper sacral vertebrae or the sacrococcygeal joint which continued downward as a band into the deeper structures.

These cases are differentiated symptomatically from the purely functional type by the fact that in

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empty the bladder.

I HERZFELD (Z)

Colston, J. A. C.: Observations on Gunshot Wounds of the Urethra. *J. Urol.*, 1920, iv, 185.

Coston reports three cases observed in a base hospital in France which illustrate the principles to be followed in the treatment of gunshot wounds of the urethra. Such wounds are invariably associated with injuries to adjacent structures and the immediate management depends largely on the extent of these complications. In the first case, there was obstruction to the passage of urine.

is urgent, but unfortunately on the battlefield the wounded man is rarely operated upon within six hours of the receipt of his wound. French statistics show a mortality of 56 per cent for non-complicated bladder wounds. In fifteen cases in which both the bladder and intestines were injured, only one patient survived.

The most urgent requirement is deviation of the stream of urine from the injured area and therefore a suprapubic cystostomy should be performed immediately. At the same time an external urethrotomy should be done, the tract of the projectile

The specific reaction in the testicle showed considerable variation in the speed and sharpness with which successive phenomena occurred as well as in the character and extent of the processes themselves. These reactions were of two fundamental types. In one group of animals the reaction was characterized by an intense cycle of acute exudation and infiltration, with a lesser degree of proliferation, followed by crisis and subsequent recurrence of secondary cycles of proliferative reaction of a minor degree.

was more gradual, and sharp alterations in its course were absent. The infection progressed with slight and irregular remissions.

cycle of reaction was fairly acute and terminated in a definite crisis with moderate regression followed in turn by recurrence and more or less pronounced secondary cycles of proliferation.

In all cases of definite infection there was diffuse involvement of the testicle, tunic, epididymis, and cord, but as the infection progressed the lesions underwent many transformations so that a variety of lesions were formed from processes which in the beginning were of a common type. Eventually the reaction became more irregular and the infection became centered in one or more foci which were commonly situated in the epididymis, tunic, scrotum, or mediastinum testis. These centers served as residual foci of infection.

The duration of the testicular process was found to be exceedingly variable. In some animals the entire reaction consisted of but a single sharp cycle and the local infection was terminated by crisis within four or six weeks after inoculation. As a rule the period of active infection persisted from two to four months, and quiescent or inactive lesions not infrequently continued for from four to six months. In exceptional instances local infection persisted for more than a year.

G. E. BULLOCK

Bullock, F. D. and Rohdenburg, G. L.: Fluctuations in Concomitant Immunity. *J. Cancer Research*, 1920, v, 129.

The variations in the percentage of induced immunity obtained by the methods commonly used in immunizing animals against transplanted tumors are well known.

The experiments reported by the authors were planned to determine fluctuations in concomitant immunity and to discover the factors responsible for them.

Three tumor strains were used, the Buffalo rat sarcoma, the Flexner-Jobling rat sarcoma, and the English mouse carcinoma 63. A standard technique was used in order to eliminate variations due to differences in procedure. The animals were inoculated with 0.003 gm. of the given tumor strain.

Eighteen days after the primary inoculation a reinoculation was done in the tissues of the opposite side of the body with a similar dose of the tumor strain. The tumor used for the second inoculation was selected from the tumors resulting from the first inoculation. The final figures were based on the condition present on the twenty-fourth day of the second graft.

Concomitant immunity, as observed through six generations of the Buffalo rat sarcoma ranges between 100 and 65 per cent, a variation of 35 per cent. The variations observed through seven generations of the Flexner tumor are similar to those noted in the Buffalo tumor, 38 per cent. To obviate the factor of familial or racial tendencies a pure strain of mice was used for the mouse carcinoma 63, both tumor strain and animal being of English stock. Through eight generations of this tumor more frequent and more marked variations than in the two preceding tumors were noted. The concomitant immunity ranged between 21 and 60 per cent, a variation of 39 per cent. With all the strains no relationship could be established between the variation in induced, concomitant, and natural immunity.

The fluctuations in concomitant immunity are not due to differences in the host strain and cannot be connected with similar fluctuations in either induced or natural immunity. The vacillations must be the result of differences in the tumor itself. If they are caused by fluctuations in the growth energy of the tumor, then growth energy must be measured not by the infectivity of the tumor, as indicated by the number of takes, but by the rapidity of growth of a single given tumor.

Concomitant immunity in the author's experiments occurred most often when the individual tumor grew slowly but steadily and least often when the tumor grew rapidly. Whatever the cause of the variations noted, their presence is proof of the inconstancy of tumors as immunizing agents.

SAMUEL KAHN.

Hoskins, E. R., and Hoskins, M. M.: The Interrelation of the Thyroid and Hypophysis in the Growth and Development of Frog Larvæ. *Endocrinology*, 1920, iv, 1.

A preparation of the anterior lobe of beef hypophysis when administered to normal frog larvae results in a precocious metamorphosis. If the original larvae are small, they never become as large as the controls and the resulting frogs are small and of low vitality. When exposed to the air, they die and dry almost flat, probably because of their high water content. When the original larvae are large, the pituitary substance has a less marked toxic effect.

When the preparation employed was administered to thyroidless larvae which would remain in larval form indefinitely, metamorphosis began in twenty-four hours, but progressed slowly. It was nearly complete when the animals died or were killed.

ward is outlined. This flap is carefully dissected upward, care being taken not to injure the urethra.

The edges of the flap are sutured with interrupted sutures. They cover and form the under surface of the penis. The denuded portion of the scrotum is brought together with a few interrupted sutures.

The author concludes his article with the statement that the entirely sound operation of Bucknall should not be complicated by other attempts at cosmetics until the real purpose of the operation—the correction of the hypospadias—has been achieved.

G. J. THOMAS

Fagge, C. H.: Circumcision, Abstract of Clinical Lecture. *Guy's Hosp Gaz*, Lond., 1920, xxiv, 99.

On the basis of eighteen years' experience the author concludes that circumcision is not to be regarded as a minor operation entirely free from danger. In his opinion it is more serious than tonsillectomy. The operation should be done only under strict indications. Fagge claims that *per se* it is not important in the treatment of the prophylaxis of masturbation, enuresis, or venereal disease. Letters from various practitioners supporting this view are cited.

J. S. EISENSTADT

GENITAL ORGANS

Hoffmann, W. H.: The Venereal Granuloma (Das venöse Granulom). *Muenchen med Wchnscr*, 1920, lxxvii, 159.

In 1896 a new granulating venereal tumor was described in Guyana. The infection is transmitted by sexual intercourse and occurs in whites as well as in blacks, but is only sporadic in the Tropics. It begins as a slightly itching pustule or papule on the skin of the penis or scrotum or the lesser labia. The length of the incubation period is not known. The nodule ulcerates and gives off a foul secretion in which the causal organism is found. The condition spreads by the formation of new papules or pustules near the edge of the ulcer. The granulations continue beneath the skin until gradually the inguinal region, perineum, and anal region become involved. If the mucosa of the rectum or vagina are attacked, stenosis of these parts may result. In the most severe cases the ulceration may invade the bladder or abdominal cavity. Characteristic of the condition is the fact that the inguinal glands do not become ulcerated although they may be inflamed and swollen.

In the typical case the venereal granuloma shows an ulcer with a sunken base, which has a foul odor and a cauliflower edge. The disease has a tendency to form central scarring; it may last from ten to twenty years; it causes no pain or other disturbances of the general health; it occasionally heals spontaneously and only rarely causes death.

immunity against it.

Histologically the tumor resembles a rhinoscleroma with numerous plasma cells in the upper half of the cutis. The epidermis thins out over this granulating mass and finally the ulceration breaks

found in the secretion of the ulcer, more frequently in the plasma of the large mononucleated cells of the ulcer edge, in groups of 15 or 20. Injection into the peritoneal cavity of rabbits, guinea pigs, and rats of the bacilli grown upon media containing maltose causes death within from twenty-four to forty-eight hours but without the characteristic findings of the disease in man.

In the differential diagnosis only the malignant forms of soft chancre must be considered and the diagnosis can be made from the discovery of the causal bacillus and the improvement which

of from 60 to 120 ccm. of a 1 per cent solution of antimony tartarate in normal salt solution every two, three, or four days. This solution is sterilized by cold filtration and is given intravenously. After from 8 to 15 injections the causal organisms usually disappear and healing occurs slowly with scar formation. KRAUSE (Z).

Wishard, W. N., and Hoffer, H. G.: Résumé of the Past Two Years' Prostatic Work. *J. Indiana State M. Ass.*, 1920, xiii, 111.

This paper supplements the report on prostatic hypertrophy made by the authors two years ago. An improvement in the mortality statistics is attributed to the fact that patients seek relief earlier while their condition is still good; prolonged preliminary treatment is given when necessary, a careful study is made of the bodily functions; the operative procedure is adapted to the individual case; the anesthetic is chosen judiciously; and the patient is given better postoperative care and nursing.

If the patient's condition is good the operation may be performed as follows:

between 60 and 80 years old. Two were over 80 years, the oldest, 84 years. The chief symptoms were frequency, 63 cases; difficulty in voiding, 34 cases; incontinence or dribbling, 3 cases; acute retention, 1 case. The duration of the symptoms varied from one to more than twenty years. The amount of residual urine varied from less than 1 oz. to more than 30 oz. A catheter had been used in 48 cases.

removal of the antitrypsin inhibition and the consequent formation of protein degradation bodies for their growth was also disproved. The degradation bodies were formed apparently by autolysis of the tissues due to the increase of the H-ion concentration at the site of the infection.

G. L. BEILBY.

ROENTGENOLOGY AND RADIUM THERAPY

Bauermcister, W.: X-Ray Phenomena from the Appendix Region (Roentgenologisches aus der Blinddarmgegend) *Arch f Verdauungskr*, 1920, xxi, 121.

The ascending colon becomes filled in from six to eight hours after the ingestion of a contrast meal (citobarium). In disease, shadow spots remain in

gas and in cases of faecal obstruction, such as that due to carcinoma of the ascending colon

Delayed motility of the barium meal is important. If rests remain for hours or days and the cause is not found in the large bowel, it must be assumed that there is some obstruction or retardation in the appendix itself due to inflammatory changes in its wall. The simultaneous filling of the appendix with contrast material permits the differentiation of uterine stones or other concretions. The value of this X-ray diagnosis is illustrated with several case histories.

FRANCIS FIM (Z)

Jordan, A. C.: Radiology in Chronic Intestinal Stasis. *Lancet*, 1920, ccviii, 736

The author opens his discussion by pointing out that the use of radiology as an aid to the diagnosis of disorders of the stomach and intestine brings up questions as to the definition of the normal. On assuming the erect position, the human body evolved structures which are intended to adapt it to the new position. The X-ray study of intestinal stasis has taught us the sites, advantages, and disadvantages of these new structures and their effects on other organs

Normally the muscles of the anterior abdominal wall keep the viscera in place. Severe stasis is the result of an adverse cycle which begins in infancy. Artificial feeding leads to overfilling of the stomach and this, by weighing down the transverse colon, causes its contents to solidify and stagnate. The tension exerted on the mesentery interferes with peristalsis, straining occurs in efforts to void the solid faeces, and elongation of the pelvic colon results.

The viscera fall if the abdominal muscles fail to support them. Such failure may be due to excessive fatigue or weakening of the muscles by bacterial toxins resulting from stasis. The strain falls on the mesentery, which either slips from its attachment or becomes thickened where the strain is greatest. In the former case, a visceroptosis results, the heavier viscera dropping sometimes as low as the true pelvis.

In the second case nature forms new bands in an attempt to support the viscera. These bands, which may be demonstrated radiologically, are found in various locations such as the hepatic and splenic flexures of the colon and about the appendix and caecum. A kink may form at some site along the last 6 in. of the small intestine, and another band may descend from the liver to the large bowel at or near the hepatic flexure or to a viscus at a lower level. The obstruction in the bowel is the result not only of mechanical factors but also of a spasm set up for a considerable distance by the irritant action of the band

In slight cases of unresisted ptosis the caecum is mobile, but in severe cases it becomes impacted in the deepest part of the pelvis. The backward rotation of the caecum in the pelvis causes a torsion of the terminal coil of ileum and this in turn results in ileal stasis. Spasm at the ileocaecal entrance may lead to general thickening and hypertrophy of the last 6 in. of the small intestine which in many cases is associated with some degree of dilatation

Stasis in the large intestine causes catarrh of the mucous membrane. As a result of spasm, the latter portions of the large bowel become reduced in caliber, the caecum and ascending colon become dilated, and stagnation results. Colitis may lead to the development of a new growth or diverticulitis. Diverticulitis occurs usually in the iliac colon, but may be found on the proximal side of any obstruction or abnormally tortuous portion of the large intestine.

During development in some cases the caecum becomes attached abnormally high. Under such circumstances it may not descend and the terminal coil of ileum is caught in the bands which bind it to the posterior abdominal wall

Ileal stasis results in an overloading of the lower coils of coils into of the

also from its line of attachment along the posterior abdominal wall. Eventually all parts of the small bowel are involved and the condition produces a kink at the duodenojejunal juncture which leads to distention of the duodenum and pyloric spasm

The cardiac orifice of the stomach is the highest point of the alimentary tract affected by ileal stasis. As a result of pyloric spasm and its associated enlargement of the stomach there is abnormal traction on the cardiac orifice which sometimes leads to persistent spasm at this site and consequent obstruction and dilatation of the oesophagus.

In intestinal ptosis microbic invasion causes not only a general toxæmia, but also a local infection of the duodenum and sometimes an infection of the stomach. The invasion of the distended duodenum by pathogenic micro organisms is followed by congestion of the mucous membrane and later by ulceration. By extension into the common bile-duct the organisms may cause also a cholecystitis and pancreatitis. In the stomach the microbic invasion

Certain signs of special value in infants are the pallid mucous surfaces and the ochre tint of the skin. This color is generalized but more manifest in the face, palms of the hands, and soles of the feet. It is an earthen or ashen tint. The mucous surfaces are pale because of anæmia with both oligocythæmia and oligochromæmia. This appearance is usually manifested at the end of the first two days.

Another valuable but inconstant sign is the infiltration of the face. The eyelids, cheeks, and lips may become moderately infiltrated and oedematous, especially in the morning. Irritability and sleeplessness are marked. Fever is often very high, oscillating between 38 and 40 degrees C. and may be associated with convulsions. In some cases fever is absent entirely but usually it is persistent, irregular, and remittent. Vomiting is frequent and generally follows nursing.

Urotropin, sâol, hot baths, and vaccines are used in the treatment. Urotropin is given in large doses, as much as 40 to 70 gr. per day. Alkaline diuretics may be given to lower the acidity of the urine, although the antiseptic action of the urotropin depends on the acidity of the urine. Occasionally pyelitis resists any form of treatment, the exacerbations and remissions continuing for weeks. In such cases autogenous vaccines may be tried. The author cites a case which responded readily to this form of treatment after other means had failed.

W. R. MECKER

Keyes, E. L.: Problems Concerning Urinary Calculi.
Internat. J. Surg., 1920, xxviii, 120

Urate stones are found more frequently in the bladder and oxalates more often in the kidney. Both probably form in the kidney pelvis, but the rough oxalate stone is retained there, while the smooth urate stone may pass unnoticed to the

bladder. The passage of renal calculi through the ureter may be wholly without symptoms. Ureteral colic is comparable to the cramp in the leg of a swimmer and probably not helpful. Operation for ureteral stone is indicated when alarming symptoms develop, the stone does not progress, and the stone is more than 0.5 cm. in diameter. The shape of the calculus, however, rather than its size determines the rapidity of its passage down the ureter.

In operating on bilateral stones operate first on the kidney with the better function. This is usually the kidney giving painful symptoms. Impaction of the stone in the ureter may temporarily reduce its function below that of its fellow. In some cases it may be practicable to operate upon both kidneys at once. In emergency cases provide drainage, preferably by pyelotomy. In cases of anuria the drainage should always be bilateral. Search for the stones should be made later. Geraghty's formula of deficient kidney function is helpful.

In 239 cases studied bilateral renal calculi were found in 25 per cent and calculi in both bladder and kidney in 4 per cent. The kidneys passed all of the stones in only 28 per cent. In 10 per cent the stones were arrested in the bladder or urethra, more than one-third being retained in the kidney pelvis and less than one-third in the ureter. If the urinary tract is clear after the passage of the first calculus, subsequent stones forming in that kidney will probably pass. Stones may be present for a long lifetime without causing symptoms and if they have grown so large that nephrotomy is required their removal is dangerous. Single kidney is not a contra-indication to the removal of calculi.

In order to overcome infection due to stone it is important to massage the prostate, give urinary antiseptics, and provide proper drainage of the ureters and bladder.

V. D. LESNICKSE.

WOUNDS OF THE JOINTS

It has been found that the synovial membranes of joints are not as susceptible to infection as the surrounding structures. The treatment of joint wounds therefore should consist of: (1) thorough excision of all damaged tissues down to the bone; (2) cleansing of the joint, and (3) suture of the synovial membrane without drainage.

Bullet and puncture wounds without injury to the bone should be left alone unless symptoms of infection develop, when treatment should be begun immediately. Hæmarthrosis should be aspirated.

Lacerated wounds of the joints without injury to the bone should be operated upon without delay. All injured and devitalized tissue, including the torn edges of the synovial membrane, should be removed, the wound thoroughly cleaned with a weak antiseptic solution such as flavine or simple salt solution, and the synovial membrane sutured without drainage. It is best to close the entrance wound secondarily after from three to six days following treatment with alcohol and bismuth-jodoform-paraffin paste. Movement of the joint should be begun as soon as the reaction has subsided, which is usually in about a week or ten days.

The treatment of wounds of the joints associated with injury to the bone depends upon the joint involved and whether stability is preferred to motion. When ankylosed the limb should be straight. If good motion cannot be obtained in the shoulder it should be ankylosed with the arm abducted and brought slightly forward. A flail shoulder joint is useless as it tends to become adducted. If the shoulder is ankylosed sufficient motion for use can be obtained from the scapula. In the elbow and wrist motion is more important than stability as even a deformed arm, if movable, may be very useful.

Injuries to bone vary from slight cracks to extensive destruction. The injury should be fully exposed and all dirt, foreign substances, and devitalized bone removed.

When the injuries of the articular cartilage are slight a certain range of motion can be obtained. When the articular ends have been extensively injured, excision of the joint should be done to obtain ankylosis in the knee, ankle, and shoulder, and a mobile joint in the elbow and wrist.

In cases of injury to one condyle of the femur or

injured portion need be removed.

The principles governing the treatment of injuries of the ankle are the same as those for the treatment of injuries of the knee.

In the elbow and wrist motion is necessary. To obtain this in the elbow the injured portion of the bone should be removed, the joint closed, the en-

trance wound treated, and the joint exercised. If the motion obtained is insufficient, the joint may be excised later. The wrist should be treated similarly except that in all injuries the cock-up splint should be applied.

If in extensive wounds of the elbow sepsis can be guaranteed, cleansing of the wound and replacement of the fragments will prevent the formation of a flail joint. If ankylosis results, the joint should be excised.

When there is sepsis and it is necessary to remove so much bone that the formation of a flail joint is unavoidable, an apparatus may be worn to strengthen the joint, bone grafting may be done to form a false joint, or ankylosis may be effected.

As a rule joint sepsis may be prevented by the early removal of all damaged tissue. In some cases of sepsis aspiration will take the place of more radical treatment. Excision of the joint has been successful but may not prevent pain when the patient walks.

SURGERY OF THE CHEST

When a thoracotomy is properly performed the blood pressure does not fall. Ten centimeters of the fifth rib or some other rib should be resected on the anterolateral aspect of the chest. The two contiguous ribs should then be separated widely by means of a strong retractor. The lung should then be delivered outside the chest and examined carefully.

Adhesions should be broken by the fingers or the scissors. By means of a head light the entire cavity of the chest and the wall of the mediastinum should be examined. All foreign bodies, devitalized tissue, and pus should be removed and bleeding points ligated and sutured. The chest wall should be closed in layers. Aspiration of the air by a needle will hasten the expansion of the lung.

Wounds of the chest should be treated like other wounds. Many penetrating chest wounds and those due to small fragments may be left alone if uncomplicated by hæmorrhage or infection. The indications for surgical interference are:

1. Hæmothorax. In the absence of other indications for thoracotomy, aspiration is indicated. In this way the culture medium for the growth of bacteria is removed and the danger of adhesions is minimized. Infection occurs in 40 per cent of cases of hæmothorax. Its source is in the missile, in in-driven clothing, or the lung itself. In all cases of hæmothorax a bacteriological examination should be made daily until the danger of infection is past. If infection other than streptococcal infection occurs and is discovered early, a thoracotomy should be done, the pleural cavity mopped out, and the chest wall closed. If empyema develops drainage must be instituted.

2. Hæmorrhage.

3. Open thorax. This is a condition in which the air passes in and out of the pleural cavity with respiration. Death may occur from asphyxiation or infection. The treatment indicated is thorough

found with marked frequency but the development of meningitis was comparatively rare. Carriers and contacts always suffered from "colds" which were characterized at first by a profuse watery nasal discharge showing meningococci in pure culture. Later this discharge was less fluid and more sticky. Therefore nasal catarrh seemed the natural disease produced by this organism and meningitis developed only when some other factor was introduced. This other factor is not necessarily an increased virulence in the meningococci of a single type for two and three types have been found in the same epidemic.

Concluding that sphenoidal empyema is a state in

frequent occurrence that sphenoidal sinus empyema determines the onset of meningitis, any causes leading to the inflammatory closure of the ostia may be accepted as determining factors. Such factors may be a mixed infection, a suppurative max-

cated by the fact that such an empyema was found in 32 of the 34 autopsies upon which Embleton's paper is based and the 2 bodies in which it was not found were those of patients who died long enough after the onset for the empyema to have cleared up. In the examination of carriers who had completely recovered no meningococci were found in the sinus. Forty-seven patients who were acutely attacked but had completely recovered showed no sphenoidal empyema. The condition was discovered, however, in each of a series of 5 patients operated upon for hydrocephalus.

If with early and vigorous serum treatment the sphenoidal sinus empyema disappears, recovery will probably follow, if the empyema persists, a relapse of hydrocephalus will result. The author does not favor drainage of the sinus during the acute stage as 3 patients died following such treatment.

There was no evidence in the series of autopsies reported to show that the meningococci pass from the nasal mucosa to the meninges by way of the cribriform plate of the ethmoid. Every cribriform

dence of direct spread through the sphenoid bone in 7 cases of the series and in 3 such cases the meningococcus was found. Other possible routes are the systemic lymphatics and the blood stream.

Demonstrating the relationship between persistent hydrocephalus and sphenoidal empyema was the fact that each of a series of 10 hydrocephalus cases showed the latter condition. As in 7 of the 10 cases

pus was found in the cerebrospinal fluid in the ventricles while the fluid from the lumbar cord was clear, there is apparently a close local connection between the hydrocephalus and the sphenoid

entrance is probably the blood stream.

The author summarizes the course of nasal meningococcus infection as follows:

1. Simple catarrh followed by recovery or chronic infection.

4. If the empyema remains and is active, death is probable. If the empyema remains quiescent, there may be a recrudescence, a relapse, or a smoldering infection with hydrocephalus.

Operation on the sphenoidal empyema always increases the symptoms, even in patients who recover. Operation during the acute stage is dangerous.

J. D. Cook

THROAT

Guthrie, D.: Syphilis of the Throat, Nose, and Ear; Its Diagnosis and Treatment. *Practitioner*, 1920, civ, 131.

In the pharynx the most common lesion of syphilis is a mucus patch located on the tonsil, the faucial pillars, the tongue, and the inner aspect of the lips. Chance also occurs and is characterized by cartilaginous induration which is felt on palpation with the gloved finger, involvement of only one tonsil, enlargement of the cervical glands, and the persistence of the lesion for several weeks.

Another syphilitic lesion in the pharynx is the

and posterior pharyngeal wall may be bound together in a cicatricial mass.

The common lesion of nasal syphilis is the

by syphilis. It is in the inner ear and its associated nerve elements that the disease is most destructive. About 5 per cent of syphilitics are affected in this region. The cochlear and vestibular branches may be attacked singly or together. A characteristic effect of cochlear involvement is shortening of bone conduction. Syphilis of the inner ear may occur at any stage of the disease. It is a neuro-recurrence due to the syphilitic virus.

written to the father a publication as such a letter was a privileged communication.

The father appealed the case, but the upper court sustained the finding of the lower court.

J. A. CASTAGNINO

Injured Employee Treating Himself. *Banner Coffee Company et al. vs. Industrial Commission et al (Wis.) 174 N. W. R., p. 544*

The question under consideration was whether or not the failure of an employee to consult a physician relieves the employer from liability. The facts of the case were as follows:

The widow of a former employee of the Banner Coffee Company filed a claim with the Industrial Commission for the death of her husband who died from the effects of an injury received in the course of his employment with the Banner Coffee Company. The Commission made an award of \$3,000.00 and this award was affirmed by the Circuit Court. The Banner Coffee Company appealed.

When the employee was injured he did not consider the injury serious and continued to work, merely dressing the wound with carbolic salve as he was accustomed to do with similar injuries. One of the officers of the company told him to see a certain physician but did not say that this physician was the physician of the company or that the company would pay for his services. It was the contention of the company that the death was due to the failure of the employee to consult a physician rather than to the original injury.

The upper court held that the average laboring man does not go to a physician every time he has a slight injury, and the fact that the employee of the Banner Coffee Company had been accustomed to use carbolic salve whenever he received such an injury justified him in using it in this case. It was the duty of the company to see that he consulted a physician. Merely telling him to see one and not explaining to him that the physician recommended was the company's physician and that his services would be paid for by the company would not relieve the company from liability. The finding of the Industrial Commission and the circuit court was affirmed.

J. A. CASTAGNINO.

Privileged Communications—Waiver—Conversations after Relations Have Ceased. *Arnold vs. Ft. Dodge D. M. & S. R. Co. (Iowa) 173 N. W., p. 252.*

The plaintiff, Arnold, fell on the tracks of the defendant railway company in his attempt to escape being hit by a reckless automobile driver. The

evidence showed that he tried to roll off the tracks but an oncoming street car crushed his right foot. The evidence further showed that the street car was not equipped with fenders or sand and that if the car had had such equipment the motorman would have been able to stop the car in time to avoid the accident.

that any statements made by him to the physician were privileged communications but the defendants contended that the plaintiff testified to these facts on cross examination and therefore waived the privilege. The defendants further contended that some of the statements were made to the physician after the relation of physician and patient had ceased and therefore were not privileged.

In reviewing the case, the upper court held that any testimony given under cross examination is not voluntary and therefore not a waiver of a confidential communication between a patient and a physician, but that a communication made after the relation of physician and patient has ceased is not privileged. The lower court entered a judgment for the plaintiff and the upper court affirmed the judgment of the lower court.

J. A. CASTAGNINO

Time of Liability of Physicians and Surgeons. *Bowers vs. Santee (Ohio) 124 N. E. R. p. 238*

Santee, the defendant, was called by the plaintiff, Bowers, December 29, 1913, to treat a fracture of the left leg just above the ankle. The physician set the bones and continued to treat the patient until May, 1914. In April, 1915, the plaintiff brought an action against the physician, alleging negligence and want of skill in the treatment of the fracture.

The physician contended that the action was barred by the statute of Ohio which provides that such an action must be begun within one year of the date of the injury of which complaint is made. The plaintiff contended that that statute did not come into effect until May, 1914, the date of the last treatment.

The lower court sustained the contention of the physician and entered judgment for him, but the upper court held that the injury complained of did not occur upon the date of the first visit of the physician but covered the entire period of treatment and that the statute did not become effective until the date of his last treatment. The judgment of the lower court was reversed and remanded.

J. A. CASTAGNINO.

are congenital, they usually manifest themselves between the second and fifth decades of life. The onset may be sudden after an acute exanthema, or gradual and associated with inflammation of the upper respiratory passages. Other associated ills, of rare occurrence and unestablished interrelation, are anæmia, syphilis, and paralysis.

Pseudo angiomas consist of enlargement or dilations of normal tissues or benign neoplasms. Simple angiomas consist of newly-formed capillary blood vessels with thin or thick walls surrounded by connective tissue. Cavernous angiomas consist almost entirely of newly-formed blood spaces of various shapes and sizes and contain many intercommunicating alveoli lined with endothelial tissue and surrounded by much fibrillar connective tissue and a small amount of smooth muscle. The blood in the alveoli remains normal. Lymphangiomas consist of newly-formed lymph spaces separated by varying amounts of connective tissue and sometimes in direct contact. They are lined with endothelium and contain a substance resembling true lymph.

The method of choice in the treatment of all laryngeal angiomas is suspension laryngoscopy and

the insertion of radium directly against the tumor. The author believes that radium is specific for all true vascular growths of the larynx as well as of

torily treated by fulguration or the use of the electric cautery. Like other laryngeal tumors angiomas may require tracheotomy for the relief of dyspnoea. Intubation is to be avoided because of the danger of hæmorrhage. Radical operations, such as thyrotomy with or without cauterization are to be employed only as a last resort to relieve distress or to remove large angiomas which may be the cause of hæmorrhage. In such cases thyrotomy offers the best exposure and the least danger.

The author gives the histories of three of his own cases. In 1 case thyrotomy and cauterization were done. In 2 others the use of radium resulted in improvement. Histories of some two dozen cases in which the diagnosis is doubtful are summarized from the literature.

J. D. Coox.

angled sound. Picking up of the round ligaments with the forceps about one-third of the distance from their origin. Suturing of the ends of the loops with two or three sutures which take up also some of the uterine muscle. Suture of the doubled ligaments with two or three sutures on each side. One to two sutures passed through the peritoneum, uterus, and peritoneum at the level of the internal os. One or two sutures passed through the vagina, the peritoneum, the uterus, the peritoneum, and the vagina.

The patient is allowed to sit up on the fifth day, frequently even earlier. She is discharged from the hospital on the tenth day. COLMERS (Z).

Keiffer, H.: Lipolysis of Fibromyomata of the Human Uterus (De la lipolyse des fibromyomes de l'utérus de femme). *Rev. franç. de gynéc. et d'obst.*, 1919, xiv, 451.

Keiffer discusses the regression of fibromyomata of the uterus. He had occasion to perform a caesarean operation and hysterectomy on a woman whose uterus showed a collection of fibromyomata of varying sizes and all degrees of development. A thorough histologic examination was made of the sections taken from the various nodules. This examination showed that lipolysis is one of the processes which brings about the regression and almost total, if not total, disappearance of such tumors. Associated factors are complicated tumefaction and hyaline, mucous, and other forms of degeneration. The lipolysis is most marked in the muscular fibers. The fibromyoma ultimately becomes a spongy tissue. The most interesting stage is that in which extremely delicate infiltrations of fat are seen in the colloidal state. W. A. BRENNAN.

Little, J. W.: The Rational Treatment of Carcinoma of the Uterus. *Minnesota Med.*, 1920, iii, 159

Little believes that in carcinoma of the body of the uterus a panhysterectomy should be done and followed by prophylactic radiation

Cases of cervical carcinoma in the operable stage followed by operation. author has come to the conclusion that the results obtained from radiation alone are as good as or better than those obtained from radiation and operation and with this method there is practically no danger or pain. Radium is able to penetrate where it is impossible to use the knife.

In inoperable cases the application of radium is much superior to any other treatment. When large fungating masses have caused toxæmia, they should be removed with the cautery and the area treated with radium.

Little has abandoned the Percy cautery for radium. He does not advocate the Wertheim operation because of its high primary mortality, its serious sequelæ such as vesical, ureteral, and rectal

fistulae, and because the cures effected are too few to compensate for the difficulties and dangers of the method. C. H. DAVIS.

ADNEXAL AND PERI-UTERINE CONDITIONS

Rubin, I. C.: The Non-Occlusive Demonstration of the Peritoneum: Preliminary Report. *J. Am. M. Ass.*, 1920, lxxiv, 1017

In experiments on extirpated uteri with intact adnexa it was found that oxygen gas introduced through the cervix passed through the tubes and peritoneum. The method was used on patients where open, the presence of the gas in the peritoneal cavity was readily detected with the X-ray. There were no bad effects. In some cases the result confirmed the clinical diagnosis of probably closed or patent tubes. In a number of cases the tubes were proved to be open when there had been reason to suspect that they were closed by the disease, while in others they were demonstrated to be occluded when there had been reason to believe them normal. The method had practically the value of an exploratory laparotomy. The two possible dangers, embolism and infection, are more theoretical than actual.

S. A. CHALFANT

MISCELLANEOUS

Block, F. B.: The Treatment of Acute Gonorrhœa in Females. *Am. J. M. Sc.*, 1920, cliv, 572.

A close relationship with undergraduate medical students for several years has convinced Block that there is something lacking in the present teaching of the subject of acute gonorrhœa. The general tendency of authors has been to skip over the acute

tion and treatment during the acute stage may frequently prevent the ravages of pelvic inflammatory disease. It is a common experience for the gynecologist to cure cases of acute endocervicitis, but the physician in general practice is always skeptical about such a report. The object of this paper is to encourage more extensive instruction in the treatment of acute gonorrhœa in the female so that the practitioner may undertake the treatment of these cases with optimism as to the outcome even though he may not be successful in all cases.

ACUTE URETHRITIS

Acute urethritis, which is usually the first stage of acute gonorrhœa, is best treated by absolute rest without local treatment during the period of the acute purulent discharge. The average patient who is suffering from this condition, however, can-

A tube for draining the bowel J H PRINGLE *Lancet*, 1920, cxcviii, 918

Circumcision forceps M N. MOSKOVICH. *J. Am M Ass*, 1920, lxxv, 1167.

SURGERY OF THE HEAD AND NECK

Head

Some cases of craniocerebral surgery C OLIVA *Riforma med*, 1920, xxxvi, 38

Notes on injuries of the skull O N MELAND *Minnesota Med*, 1920, iii, 195

A case of foreign body in the head L M SCHMIDT *U S Nav M Bull*, 1920, xiv, 254

Foreign bodies in the ventricles of the brain G L RECHARD *Med Press*, 1920, n s cxix, 333

Hypophyseal surgery E ATEVOLI *Riforma med*, 1919, xxxv, 1081

Discussion on the surgery of the pituitary gland P SARGENT and others *Proc Roy Soc Med*, Lond, 1920, viii, Sect Surg, 35 [105]

Trigeminal neuralgia, injection of alcohol into the gasserian ganglion H H RAYNER *Brit J Surg*, 1920, vii, 516 [106]

On the treatment of facial cancer, angioma, etc P LORETTI *Riforma med*, 1919, xxxv, 1103

Fracture of the malar bone A D BLIVAN *Surg Clin Chicago*, 1920, iv, 329

Rhinophyma M G SEELIG *Surg, Gynec, & Obst*, 1920, xvi, 304

Neck

Cervical rib C B DAVIS. *Surg Clin Chicago*, 1920, iv, 269 [106]

Goutier J B WILLIAMS *J Missouri State M. Ass*, 1920, xvii, 155

Is endemic goutier a water-borne disease? J C O'DAY *N York M J*, 1920, cxi, 634

Diffuse vascular goutiers. J C O'DAY. *N York M J*, 1920, cxi, 708

Chronic diarrhoea associated with an adenoma of the thyroid gland A H GORON and A T. BAZIN *Canadian M Ass J*, 1920, v, 365 [107]

C. B

SURGERY OF THE CHEST

Chest Wall and Breast

Tuberculosis of the chest wall W MARTIN *Ann Surg*, 1920, lxxi, 517

A remarkable case of gunshot wound of the chest H LINTHALL *Med Times*, 1920, xlviii, 88

Bloodless thoracotomy R J BEHAN *J Am M Ass*, 1920, lxxiv, 1081

Observations on a method of operating for the treatment of purulent pleurisy S DALMAZZONI *Riforma med*, 1920, xxxv, 1066 [107]

The treatment of purulent pleurisy by closed drainage and continuous aspiration P DELAZI and C GEROUD. *Rev de chir*, Par, 1920, lviii, 1

The management of empyema A MCGLENNAN *N York M J*, 1920, cxi, 590 [107]

The treatment of empyema in lobar pneumonia by early aspiration T MCLRAE *Canadian Med Ass J*, 1920, x, 162

The surgical treatment of acute empyema by valve drainage provided by a flap of skin, fascia, and muscle, under local and paravertebral anaesthesia W R MORRISON *Boston M & S J*, 1920, clxxvii, 366

The surgical treatment of chronic empyema W WHITMORE *Boston M & S J*, 1920, clxxvii, 396

Mammary cancer in man, extirpation and axillary dissection under local anaesthesia B N CALCAGNO *Rev Assoc med argent*, 1919, xxvi, 558

The operability of breast cancer W DOOLIN. *Med Press*, 1920, n s cxix, 330

Mammary carcinoma W. G HARTMANN *Hahneman Month*, 1920, iv, 249

Trachea and Lungs

Velipin in a bronchus removed through the bronchoscope R H CRAIG and W. A WILKINS *Canadian M Ass J*, 1920, v, 370

Heart and Vascular System

Extraction of a sewing needle from the heart Z CORN *Lancet*, 1920, cxclviii, 813.

Pharynx and Oesophagus

Two successful cases of cervical oesophagotomy for the removal of a foreign body. L DAY *J Roy. Army M Corps*, Lond, 1920, xxvii, 363

Notes of a case of oesophagectasis in an infant, with radiograms F LANGHEAD *Proc. Roy Soc. Med*, Lond, 1920, viii, Sect Dis Child, 43 [108]

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Davis, E. P.: Infection of Intestinal Origin Complicating Pregnancy, Labor, and the Puerperal State. *Med. Rec.*, 1920, xxvii, 551.

The author groups the various infections of intestinal origin and contrasts them with puerperal septic infection of uterine origin. Special attention is given to the hygiene of pregnancy, the prevention of constipation by means of proper diet, the administration of refined petrolatum, and proper exercise, particularly walking.

Appendicitis is common during pregnancy and necessitates prompt surgical intervention. Cholecystitis, which so frequently occurs first during pregnancy, does not always require operation, but this possibility should always be considered.

Cases are cited to show the dangers of violent purgation during pregnancy and the possibility of trouble from the presence of hard fecal masses in the bowel at the time of labor.

Pyelitis during pregnancy is usually of blood-stream origin and in the author's experience occasionally requires drainage through the loin.

Appendicitis beginning during the late puerperium may be recognized by the absence of the ordinary local evidences of puerperal sepsis. It must be cared for promptly. General infection of the intestinal lymphatics may be due to excessive purgative and may occur also without such cause.

S A CHALFANT.

Spencer, H. R.: The Lettsomian Lectures on Tumors Complicating Pregnancy, Labor, and the Puerperium. III. *Lancet*, 1920, cxcvii, 529.

In discussing cancer of the uterus complicating pregnancy, labor, and the puerperium, the author covers the etiology, diagnosis, prognosis, and treatment of the disease. He reviews also other published records of similar cases and describes in tabular form 10 cases which he observed in the University College Hospital. The after-histories of 3 cases previously reported by him are mentioned in order to bring the case records up to date. These 3 patients have been free from recurrence for twenty-five, twenty-two, and nineteen years respectively and 1 has subsequently borne a healthy child. All were subjected to a high amputation of the uterine cervix with the Paquin cautery during the puerperium. In 2 other cases of cancer complicating labor a vaginal hysterectomy was performed during the puerperium. In these cases the cure has extended over a period of five years.

Of the author's 10 patients 7 were between 30 and 40 years of age. The youngest was 26 years old. Statistics show that cancer complicating pregnancy

reaches its maximum in persons less than 40 years of age while the maximum incidence of cancer not complicating pregnancy is reached after the fortieth year. In women less than 30 years old cancer occurs in the pregnant and non-pregnant in the ratio of 6:1. The youngest patient whose case was reported by Sarwey was 22 years of age.

The author's patients show the influence of child-bearing on the development of cancer. The patients in this series had had an average of 7 children and more than 8 pregnancies each. The part played by lacerations and erosions is not credited with any direct bearing on the condition, but venereal disease is considered to play a larger part than is generally believed.

The author urges the use of three methods of diagnosis. (1) digital pelvic examination, (2) inspection, and (3) microscopic examination. It seems impossible to find a proven case of carcinoma of the fundus complicating pregnancy. In cases of cancer of the cervix during pregnancy pain may develop early as the result of uterine contraction or sepsis. Attention is called to the atypical picture presented by one case in which small pockets of pus were found, the growth did not break down on examination, and no bleeding or increase in the size of the growth was noted while the patient was under observation. In this instance a microscopic examination was not made at the time.

The prognosis is grave in cases of cancer complicating labor. Obstruction, hemorrhage, discharge, and infection tend to prevent impregnation or lead to premature labor with an associated high fetal and maternal mortality. Pregnancy does not appear to increase the tumor's rate of growth.

The results of operative treatment are not encouraging. Wertheim has obtained the best results. Four of his patients remained well for five years, 1 died from embolism, and 1 had a recurrence. The author does not consider Sarwey's list of 1908 sufficiently inclusive to be representative of the mortality following the Wertheim operation.

The treatment of cancer of the cervix depends on the operability of the condition and the viability of the child. If the condition is considered inoperable pregnancy should be allowed to reach its full term and then a Porro operation with the serrencoud should be performed. In advanced pregnancy operable cases should be treated by cesarean section followed by extended abdominal hysterectomy or by high amputation of the cervix during the puerperium following normal delivery or cesarean section. In postpartum cases radium treatment may give favorable results.

Five of the 7 cases in which treatment resulted in a favorable issue were operated on after delivery. The

Sera, Vaccines, and Ferments

"The use of the normal horse-serum inoculation in the treatment of sepsis" E EMMERS-ROBERTS J. Roy Army Med Corps, Lond, 1920, xxiv, 321

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The pituitary test M ASCOLI and A. FAGUOLI [130]

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small apple. On supporting the fundus with the left hand and pressing his knuckles against the tumor, the uterus spread out at once. There was no shock and no further hæmorrhage.

In the author's opinion the absence of serious symptoms was due to his promptness in relieving the condition.

A. J. SCHOLT, JR.

Hart, D. B.: The Causes of Persistence of Puerperal Septicæmia. *Edinburgh M. J.*, 1920, n. s. xxiv, 216

The maternal mortality from puerperal septicæmia in Great Britain and Ireland still ranges from a little above to a little below 1 per cent. In the Vienna First Obstetrical Clinic, under the direction of von Boer, it is 0.84 per cent.

Hart gives statistics from the investigation by Newsholme and Bonney which show that from 1911 to 1914 the mortality per 1,000 in England was 1.39; in Wales 1.67; in Scotland, 1.34; in Ireland, 2.01. This rate is less than that from 1881 to 1890, but there is still much loss of maternal life. In Scotland 37 per cent of the deaths were due to sepsis.

The chief factors which will decrease maternal mortality are:

1. Aseptic and antiseptic management of labor. Internal examination should be minimized. Sterilized rubber gloves, a sterilized gown, and aseptic bed-sheets are necessary. Instruments should be boiled.

2. More intelligent management of the passage of the head and shoulders over the perineum. Frozen sections and casts, chiefly those of Braune, Barbour, Schroeder and Stratz, should be studied. These show that Nægele's flexion is not present during labor; there is really deflexion. Perineal laceration should be prevented.

3. Better management of the third stage of labor. The author describes his own method and discusses the waiting method of Clark, Ilarvie (1767) and the Dublin School as well as the methods of the Crêdé period, 1853-1860. The mechanism of the separation and expulsion of the placenta and membranes as shown by a clinical study of casts and sections and postmortem specimens is described.

Nægele's theory of the mechanism of labor is accepted. There is usually flexion throughout labor, but casts and sections show deflection beginning even in the first stage. The physician should bear this fact in mind.

Until the presence of the sternum does not descend during labor, but the fœtus is elongated and the arms lie between the chin and the sternum, preventing flexion. Finally liquor amni passes up between the breech and fundus. Normal mechanism at crowning and emergence requires guarding, especially in the cases of rigid and elderly primiparae.

The author describes also the mechanism of separation of the membranes and placenta. Two stages must be recognized, viz., separation and

expulsion; separation of the membranes in the lower uterine segment; separation of the placenta when in part prævia. After the pains the placental

method in the third stage of labor is as follows:

The body of the uterus is grasped to prevent bleeding; the separation of the placenta is awaited; the diminution in the size of the uterus, the indications, separation, and downward expulsion of the placenta and membranes are noted; time is allowed for the final separation of the membranes; and, if necessary, expulsion is then effected by means of pressure in the axis of the brim.

Hart draws the following conclusions:

1. A return must be made to the old waiting policy.

2. The Crêdé method of separating the placenta has been followed almost universally, but should be abandoned.

3. The statement that retention of bits of membrane does no harm and that antiseptic management will prevent mischief, is dangerously fallacious.

4. A maximum of three-quarters of an hour or an hour must be allowed for the third stage of labor.

5. The placenta and membranes should be carefully inspected after labor.

C. H. DAVIS

NEW-BORN

Rodda, F. C.: Studies with a New Method for Determining the Coagulation Time of the Blood in the New-Born. *Am. J. Dis. Child*, 1920, xix, 269

A simple method for determining the coagulation time of the blood in the new-born which would require little special apparatus and could be used by any physician engaged in the care of the new-born was sought and the drop method was chosen. All factors such as the depth and site of the punc-

ture were made to control and standardize all of these factors without complicating the procedure. The apparatus adopted comprises a spring lance or a simple lance, 2½ in. watch glasses, and No. 6 shot.

The glasses and shot are first cleaned with soap and water and then with alcohol and ether. The child's heel is sponged with ether and a puncture is made with the lance set at about 0.5 to produce a free flow of blood without pressure. The first drop of blood is discarded and the second caught on a clean glass containing the No. 6 shot. A second glass is inverted over the first. The watch glasses are gently tilted every thirty seconds until the shot no longer rolls but is embedded in the clot and the glass may be inverted without dislodging it. The end-result is sharply defined. At times, because the serum is forced out, the whole clot may move, carrying the shot with it. This is not confusing, however,

The interruption of pregnancy should always be considered a serious matter. In the interests of the fetus, pelvic deformity is no longer regarded as a justifiable cause for the induction of labor. The decision to sacrifice embryonic or foetal life in the interests of the mother is not to be made lightly. The obstetrician must be sure of his ground before taking this important step. If a fair chance be given to obstetrical science, this necessity will not arise very frequently.

In the interests of the public, much good can be accomplished by spreading accurate information among women concerning those conditions which most gravely threaten mother and child in pregnancy.

EDWARD L. CORNELL.

Mellwraith, K. C.: *Obstetrics and the State.*
Canadian M. Ass. J., 1920, x, 305.

In England and Wales in 1900 there were 4.65 maternal deaths per 1,000 living births and of these deaths 2.24 per cent (48 per cent of ten years the total maternal mortality amounted to 3.69 deaths per 1,000 living births and of these only 1.44 were due to sepsis (39 per cent of the total number). The figures given do not include deaths from puerperal nephritis. From 1911 to 1915 the rates on the same basis remained practically stationary, but including the deaths from nephritis, the total maternal mortality in this period was 4.2 deaths per 1,000 living births, and the deaths from sepsis, 33 per cent of the total number.

In the provisional registration area of the United States in 1900 the total maternal death rate was 6.5 deaths per 1,000 living births and the corresponding death rate from sepsis, 2.9 (44 per cent). In New York the total maternal mortality was 10 deaths per 1,000 living births, 5.7 of these being due to sepsis (over 50 per cent of the total number).

In Ontario during the years from 1908 to 1918 inclusive the figures furnished by the Registrar-General showed that the maternal mortality was 5.4 deaths per 1,000 living births and that sepsis was the cause of 1.88 deaths per 1,000 living births (35 per cent of the total number). In 1909 the number of

deaths due to sepsis amounted to 33 per cent and in 1918 to 31 per cent of the total maternal deaths.

When the death of a woman of child-bearing age is reported in England or Wales the Registrar-General sends the physician a confidential letter requiring him to state whether the death was in any way connected with childbirth. The replies to a long series of such letters resulted in the transference of nearly 8 per cent of the case records from the records of deaths due to general causes to those of deaths due to puerperal conditions.

In England and Wales the improvement in the death rate has been attributed to the enactment of two measures—the Midwives Bill and the Health Insurance Act which includes maternity benefits. The maternity benefit insurance is compulsory and covers all wage earners whose annual income falls below a certain sum. Unmarried women as well as the wives of workers are insured against the trials of maternity. The benefits consist of a cash bonus of thirty shillings and the provision of medical attendance. Rest for a period of six weeks is enforced and at least four of these weeks must be after the birth has taken place. Inasmuch as the rest is compulsory, it is deemed fair that when the insured is herself a worker she should be given as a benefit a fixed proportion of her weekly wage during that time. This is allowed in addition to the cash bonus. The Act was administered by co-operation with the local benefit societies and local government boards. More recently a Ministry of Health has been established which has sole charge of the administrative end of the work. The funds for insurance claims are provided by government contributions and a levy on the wages of the insured or her husband. In all countries in which any action has been taken along these lines, health insurance including maternity benefits clauses have been the objective.

In addition to the measures mentioned, maternity and child-welfare centers have been established and a campaign of education and help has been begun.

The chief causes responsible for puerperal deaths are meddling midwifery, injudicious and pre-

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logic examination made by the author of mucosa removed from an infant fifteen days old these factors were lacking as were the cylindrical cells and glandular formation mentioned by other investigators. Similar findings were made by Enderlen in 2 other cases of new-born infants.

Righetti stated that if the presence of mucous epithelium in the bladder was due to an anomaly of development of the cloaca, similar structures would be found in the rectum which is of similar origin. This was found to be true and was verified also in the author's case. Therefore Formigini agrees with Righetti that the malformation occurs in the embryo at a very early period and is due to faulty development of the cloaca, the epithelium of which does not become differentiated but evolves according to the cylindrical and cubical types of cells alone.

W. A. BRENNAN

Bonn, H. K.: Hour-Glass Bladder, with Report of an Operated Case. *J. Indiana State M. Ass.*, 1920, xiii, 107.

The author's case was that of a man 60 years of age who complained of frequency, straining on urination, and hæmaturia. These symptoms had persisted for five years. Examination showed 12 oz. of residual urine containing pus, blood, and albumin, but no casts. Rectal examination revealed enlargement of the prostate. Cystoscopy showed bilateral hypertrophy of the prostate and areas of acute and subacute cystitis. The cystoscopic examination was unsatisfactory on account of constant clouding of the medium in the bladder and was followed by complete retention.

Two weeks later a suprapubic cystostomy was done under local anesthesia. Exploration of the bladder revealed a large upper cavity containing 20 oz. of urine which communicated with a smaller and lower compartment by a small, tight, round, ring-like opening which scarcely admitted the examining finger. This ring was 2 in. above the internal sphincter. The walls of the septum were continuous with the bladder wall. The lobes of the prostate were soft and about the size of a crab apple. The wound was closed with drainage into the lower cavity. Cystoscopy through the suprapubic wound failed to disclose the relation of the ureters to the septum posteriorly.

At the second operation, two weeks later, it was found that the prostate had greatly decreased in size. Prostatectomy was therefore not done, but the

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The patient began voiding at the fifth week, and the suprapubic wound was closed at the end of nine weeks.

A supplementary note gives the results observed about eight months later. At that time the bladder capacity was 645 ccm. Cystoscopy showed the

original ring-like opening connecting the two cavities. Cystograms showed two cavities communicating by a large opening. The residual urine amounted to 240 ccm. The patient catheterized himself once every other day and was feeling better than he had felt in years.

The author briefly reviews the literature relating to diverticula of the bladder of which the hour-glass bladder is a variety.

H. A. FOWLER.

Keene, F. E.: Circumscribed Pan-Mural Ulcerative Cystitis. *Ann Surg*, 1920, lxxi, 479

The author reports ten cases of "elusive ulcer" of the urinary bladder.

Although the condition is rare, Keene believes that many cases are overlooked because the earlier findings may vary only slightly from the normal.

Hunner's term "elusive ulcer" is unsatisfactory in that it gives no conception of the pathology. It is misleading also because it magnifies the importance of the ulcer which in reality is only a small portion and an end result of an inflammation involving a considerable area of the bladder wall. Until recently the author spoke of the lesion as a "circumscribed parenchymatous ulcerative cystitis." Smith, however, suggested the substitution of the term "pan-mural" for the term "parenchymatous," and as this more nearly describes the pathology and the extent of the inflammation, it has been adopted also by Keene.

In the cases reported there was thickening of the entire bladder wall with edema and minute superficial ulcerations of the mucosa. The disease usually involves the vertex of the bladder but its extent varies. In distribution it is not "patchy" but limited to one section which is generally firmer than normal. It also may extend outside the bladder.

The mucosa is thick and oedematous and stands out in sharp contrast to that of the normal bladder. The ulcers are superficial, single, or multiple, and present a clear, bright surface with sharply cut edges.

Microscopically the picture is that of an inflammation involving the entire bladder wall and paravesical tissues.

The cystoscopic picture is typical. The mucosa is oedematous and in color a diffuse dull pink.

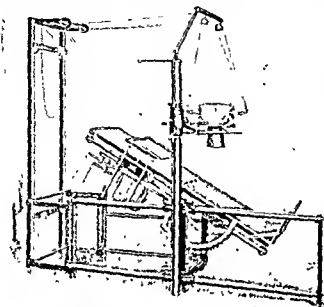
The ulcers resemble healthy areas of granulation tissue and are always superficial. They vary in size from 1 by 2 mm. to 4 by 5 mm.

The symptoms in the cases observed by the author consisted of bladder pain and intense urgency and frequency of urination. The pain may radiate superficially down the leg or into the rectum. The symptoms are usually of long standing, the average duration being about four years.

The urine may be normal, but usually contains an excess of leucocytes and erythrocytes. A normal appearing urine with a few leucocytes and erythrocytes may be regarded as characteristic of the condition.

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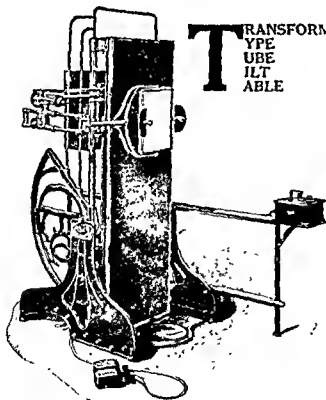


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cleaned, and some attempt made at approximating the ruptured ends of the canal. It is rarely advisable, however, to attempt a plastic repair, as sutures almost invariably become infected. External urethrotomy alone should be done only in exceptional cases for although this operation is amply sufficient in cases of ruptured urethra seen in civil practice, gunshot wounds offer a different problem as there is danger of serious infection and adequate drainage must be obtained on account of the long journey which must be made to reach a base hospital.

FRANK HINMAN

Stern, M.: A Plastic Operation for the Cure of Urethral Strictures. *Internat J Surg.* 1920, xxxiii, 100

The chief features of the plastic operation recommended by the author are: (1) isolation of the corpus spongiosum, including the bulb; (2) separation of the urethra from the urethral corpus spongiosum, (3) repair of the incision into the urethra with lateral suture to increase the size of the channel at the point where the stricture has been removed; (4) suturing of the structures over the urethra and the corpus spongiosum layer by layer; (5) suturing of the skin; and (6) the use of an indwelling catheter for several days.

V. D. LESPINASSE.

Churchman, J. W.: Hypospadias, with Particular Reference to the Operation of Bucknall. *Ann Surg.* 1920, lxxi, 486.

The author reports a case of penoscrotal hypospadias cured by the operation of Bucknall. In his opinion this operation has not received the attention its surgical soundness warrants. He regards operations for hypospadias as essentially problems in plastic surgery.

The article contains a description of the operative techniques devised by twelve different surgeons for the correction of hypospadias. Churchman is not sure of the percentages of successes which have attended these operations, but is of the opinion that occasional successes are more apt to be reported than repeated failures. After judging these operative procedures by the criteria of sound plastic surgery, he does not believe that any of them meet the test.

The well-established principles of plastic surgery, as outlined by the author, are as follows:

1. In every plastic operation there is the element of chance. The possibility of complete failure should always be taken into consideration and the question asked whether, in case this occurs, the patient will be worse off than before.

2. Plastic operations should be devised so that broad surfaces, rather than cut edges, are approximated.

3. Tension must be avoided at all stages.

4. The circulation of flaps must be reasonably preserved.

5. Flaps must be held in position without the use of elaborate retention dressings.

6. The repair of the actual defect should be done in one stage.

7. The purpose of a plastic operation is a permanent rather than a temporary result. Flaps should be devised therefore to allow for contracture and ultimate success should be planned for, even at the expense of neatness in the immediate result of the operation.

8. The probability of success in a plastic operation is always greatest, other things being equal, if infection is absent.

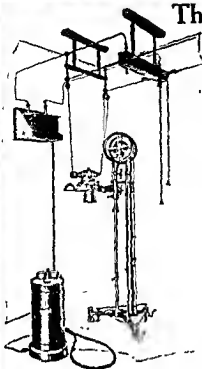
After a detailed criticism of the soundness of the surgical procedures so far devised for the cure of hypospadias, the author emphasizes the great superiority of the Bucknall operation. The steps of this procedure are as follows:

1. Correction of the curvature of the penis if indicated.

2. The plastic operation. The penis is laid back on the pubis. Traction sutures are inserted into each side of the foreskin of the penis and into the corners of the lower border of the scrotum. Two parallel incisions, $\frac{3}{4}$ in. apart, are made on either side of the urethral opening and on the ventral surface of the penis and scrotum. These incisions extend from the head of the penis to near the lowest border of the scrotum. The ends of the incisions are prolonged outward at right angles for about $\frac{3}{4}$ in. Two lateral flaps, thus outlined, are dissected outward, a small strip of skin, $\frac{3}{4}$ in. wide being left in the middle of the penis and scrotum which contains the opening of the urethra. This strip will later become the roof and floor of the urethra.

After the flaps have been dissected the penis is flexed onto the scrotum with the hypospadias opening as a hinge. The lateral skin flaps are thus brought into flat approximation with each other like the leaves of a closed book. Mattress sutures are applied through the flaps and tied over small rubber tubes. Fine sutures are used and care is taken that they do not penetrate the new urethral tube. A No. 6 rubber catheter is stitched in place in the urethra and the penis is protected from the bed clothing by a chloroform mask suspended with a bandage from the waist. The catheter is allowed to remain in place for five days. Alternate stitches are removed the same day and the other stitches a few days later.

The second stage is undertaken not sooner than twenty-one days after the first operation or when healing is complete. Before the incisions are begun a catheter is introduced into the urethra to protect it from injury during the dissection. Two incisions are made, one on each side of the penis, beginning about two finger-breaths above and lateral to its root. The incisions are continued downward over the scrotum and parallel with the penis to a point a short distance below the head of the penis as it rests on its bed on the scrotum. The incisions are connected by an incision made at right angles to them and across the lower border of the scrotum. In this way a large square flap with its pedicle up-



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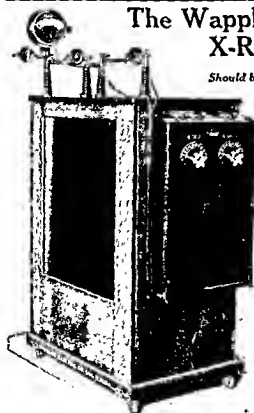
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The suprapubic operation was used in all instances and 87 of the operations were done in two stages. The interval between the first and second steps varied between ten days and four months. The average stay in the hospital was four and a half weeks. The minimum stay was seventeen days.

Of the 120 patients, 2 died in the hospital shortly after the operation: 1 on the seventeenth day from uræmia, the other from renal insufficiency on the thirteenth day. Four died since leaving the hospital, one each from scirrhous carcinoma, uræmia, bilateral pyonephrosis, and carcinoma. H. A. FOWLER.

Rohl : C . . . F . . . T . . .

As the specific secretion of the testicular connective tissue, its hormone, seemed to exert an effect upon the glandular tissue of the prostate. Rohleder has used the Henning spermin preparations (testogen and hormospermin) in cases of prostatic hypertrophy and atrophy. These preparations were of the most benefit in the early stages of the condition when there was retention of urine without residual urine. They were of some value also in the second stage, but of no value in the third stage. The results were only transitory, however, never permanent. Two case histories are given.

G. SCHMIDT (Z).

Ochsner, A. J.: Prostatectomy. *Surg. Clin. Chicago*, 1920, IV, 233.

The author describes a two-stage perineal prostatectomy.

First stage: Under ether anæsthesia a cystotomy is done, the bladder having been previously filled with a 1:4,000 potassium permanganate solution. The first incision is made 3 cm. in length directly above the pubic bone and the bladder is opened by a linear incision 1 cm. in length. A double drainage tube is placed in this opening and the wound packed with gauze. Drainage is continued for from one to three weeks.

Second stage: Under ether anæsthesia a grooved curved sound is passed into the bladder through the urethra and an incision reaching halfway between the anus and the tubercle of the ischium to point halfway between the anus and the scrotum is made. The sound is cut down upon and a blunt-pointed knife, ground to fit the groove, is passed into the bladder, cutting the urethra which is held close to the pubis to prevent injury to the scrotum. The sound is then withdrawn and the finger is passed through the wound and into the capsule of the prostate, the gland being separated at the cleavage line. The adhesions are cut and the two lobes loosened and withdrawn with Young's prostatic forceps passed through the wound. Supernumerary lobes are similarly removed. The bladder neck and the capsule are grasped in Allis forceps and a double drainage tube with perforations is passed

into the bladder. Gauze is packed into the capsule alongside the catheter to control bleeding. As the suprapubic tube still remains in place, clots do not interfere with drainage. The perineal tube and packs are removed on the second day and the suprapubic tube in one week. The patient is allowed to get up in from three to seven days and the urine is passed normally in from ten to twenty days.

The advantages of this operation are that it can be done in the same time as a suprapubic operation and through a smaller incision and gives rise to fewer adhesions. In young patients with mild obstruction and no bladder or kidney complications a perineal prostatectomy can be done without a cystotomy. The cystotomy is preferable to the use of a trocar and catheter as there is less chance that it will be followed by cellulitis. The operation can be done under spinal anæsthesia. FRANK HINMAN

MISCELLANEOUS

Lick, M.: The Cystoscopic Diagnosis and Treatment of Certain Lesions of the Genito-Urinary Tract. *Pennsylvania M. J.*, 1920, xiii, 404

The author cites the characteristic cystoscopic findings in cases of cystitis, pyelitis, calculi, and tuberculosis. He is enthusiastic regarding pelvic lavage in the treatment of pyelitis in pregnancy. The indigo-carmin test he regards as the best all-around test for the determination of renal function.

The deductions made by the author are the usual ones made in typical cases such as those reported. There is nothing new in the report as a whole and none of the cases are extraordinary.

J. S. EISENSTAEDT

Zerhino, V.: Purulent Affections of the Urinary Passages in Nursing Infants (Afecciones purulentas de las vías urinarias en el lactante). *Rev. méd. de Uruguay*, 1920, xxiii, 19

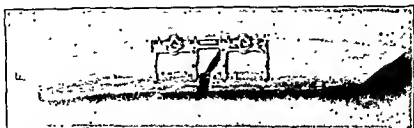
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the urine had not shown large numbers of pus cells. The symptoms common in older children in affections of the urinary tract—increased frequency, dysuria, opalescent urine with mucous threads, hypogastric and lumbar pain, and tenderness to palpation over the kidneys—are of no value in the cases of infants.

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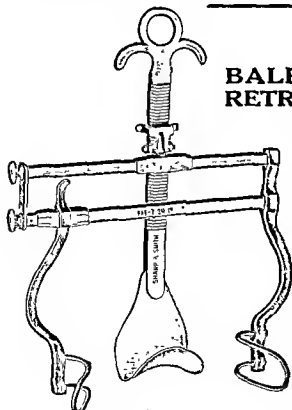


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SURGERY OF THE EYE AND EAR

EYE

Weeks, J. E., and Greenwood A.: *Enucleation of the Eyeball and Its Substitute Operations. Surg., Gynec. & Obst.*, 1920, xxx, 410.

The absolute indications for enucleation according to Weeks are: (1) intra-ocular growth; (2) a greatly shrunken eyeball; and (3) threatened sympathetic inflammation of the other eye. In the technique of enucleation it is essential:

1. To retain all conjunctiva possible.
2. To dissect close to the sclera, removing no more extrabulbar tissue than is absolutely necessary.
3. When an intra-ocular tumor is present to remove at least 1 cm. of the optic nerve next to the eyeball; otherwise, to sever the optic nerve quite close to the eyeball.

4. In dividing the optic nerve to cut from the nasal side in order to avoid perforating the os planum of the ethmoid.

Substitute operations are done for the purpose of producing better cosmetic results. Such operations are many and consist of either the removal of the entire globe with the implantation of some substance into Tenon's capsule or the removal of a portion of the eyeball with or without implantation. Weeks mentions about twenty different operations.

Greenwood, in discussing the paper by Weeks, stated that he has used large hollow glass spheres 20 mm. in diameter which he securely implants in Tenon's capsule and over which he sews the muscles. There was only 1 case of extrusion in about 200 cases. When the operation is properly done the upper lid does not sink in.

T D ALLEN.

EAR

Jones, C. C.: *Conservative Surgery of the Lateral Sinus. Ann Otol., Rhinol. & Laryngol.*, 1919, xxviii, 1164.

From a study of the literature including 50 case reports, a summary of the answers to a questionnaire sent to 100 of the leading otologists of the country, and his own case reports, the author has drawn the following conclusions:

1. The more often the jugular vein is ligated when the cases are acute.
2. The sinus should always be exposed before ligation of the jugular.
3. Ligation and resection of the jugular vein in thrombosis of the lateral sinus is a valuable procedure, but should be used only in cases in which there is undoubted evidence of septicæmia or a thrombosis of the vein.

4. The sinus should be exposed in cases of mastoiditis in which the temperature is high.

5. In thrombosis of the lateral sinus with absence of positive signs of septicæmia or thrombosis of the jugular vein the thrombus should be removed and developments awaited before the jugular vein is ligated or resected.

6. Thrombosis of the lateral sinus complicating mastoiditis is comparatively frequent and every otologist should be able to treat it scientifically.

7. Thrombosis of the sinus is nature's way of ligating, and all that is necessary in the majority of such cases is to open the sinus and remove the thrombus.

8. Except in selected cases, the ligation of the jugular vein in thrombosis of the sinus is radical and unnecessary.

O. M. RORT.

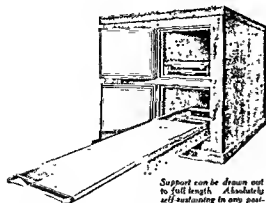
Smurthwaite, H.: *A Lesson of the War: Suppurative Middle-Ear Disease. Brit. M. J.*, 1920, 1, 467.

Of 5,000 patients treated during one year in the Ear, Nose, and Throat Department of the military hospital at Tidworth, 890 had chronic suppurating ear disease. The period of disability ranged from a few months to many years. The chief complaint was partial deafness which kept the patient from the firing line. Most of the men were anæmic from prolonged suppuration and had obtained no relief from local treatment.

Chronic suppurative ear conditions would be enormously reduced if early systematic prophylactic measures were instituted. Every fever hospital should have an otologist to treat acute ear conditions. The author cites the case of a patient who was a carrier of diphtheria bacilli; the organism was found in the aural discharge and the ear condition was the result of a diphtheritic throat.

The most favorable time at which to effect a permanent cure is during the earliest stages of the disease. During the first two months there is no marked fibrous change in the lining membrane of the middle ear and the hearing still remains unimpaired.

The pathology of acute middle-ear disease is similar to acute inflammation of the mucous membrane elsewhere in the body. The condition begins in the posterior nares with congestion and swelling, and then extends up the tube to the middle ear where serous fluid collects. Becoming septic, this causes the formation of an abscess. If the inflammation spreads so rapidly that the antrum and mastoid cells become involved before the drum ruptures, an acute mastoid abscess develops. It is therefore essential to incise the drum as soon as fluid in the middle ear produces definite bulging and shows no indication of subsiding. The patient



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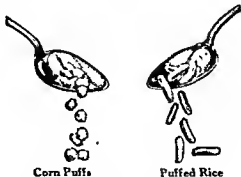


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In the treatment reliance must be placed chiefly on the general treatment with mercury, potassium iodide, and the arsenical preparations. Local treatment is essential but is subsidiary to general therapy.

After mentioning the various well-known mercury preparations, the author states that each case must be judged individually as there is no definite routine treatment for syphilis and every authority has his own favorite method.

O. M. Rorr.

Clendening, L.: The Cause of Abscess of the Lung after Tonsillectomy. *J. Am. M. Ass.*, 1920, lxxiv, 941

During the last few years the incidence of lung abscess following tonsillectomy has increased. After reviewing the most generally accepted theories regarding the etiology of this complication the author comes to the conclusion that the two most probable causes are: (1) the forcing of septic tissue into the lungs by motor-driven anesthesia apparatus, and (2) some direct relation between the tonsil and the lung, probably through the lymphatics.

Among records of cases in which the anesthesia was maintained by Clendening found lung abscess and bronchopneumonia:

for the operator, the motor-driven anesthesia apparatus feeds the ether spray into the posterior pharynx under sufficiently high pressure to balloon out the posterior space and carry infected tissue past the glottis into the lung. Even when the head is low, material accumulates in this posterior space and the pressure from the machine, being continuous, inhibits coughing.

In proof of his second contention, that the direct path of infection from the tonsils to the lung is probably by way of the lymphatics, the author

lung abscess followed postoperative hemorrhage and pharyngeal treatment. Moreover, the experiments of Grober with India ink seem to indicate the presence of this direct pathway and the tonsils have long been considered a primary focus in pulmonary tuberculosis. To prevent infection by this route the author warns against persistent effort to remove every particle of tonsil tissue and states that some method of controlling hemorrhage other than packing the raw tonsillar fossa in the septic oral cavity would be of great value.

J. D. Cook.

New, G. B., and Clark, C. M.: Angiomata of the Larynx; Report of Three Cases. *Ann. Otol., Rhinol. & Laryngol.*, 1919, xxviii, 1025

The authors accept the usual histologic classification of angiomata: (1) hæmangiomata, either simple or cavernous; (2) lymphangiomata; and, added for clinical convenience, (3) pseudo-angiomata including the varices and lymphectases.

The rarity of the true vascular tumor is evident from the fact that from the first diagnosis, which was made by Fauvel in 1876, only 55 conclusively proved cases have been reported and in a series of 217 true laryngeal neoplasms studied by the authors at the Mayo Clinic there were only 3 angiomata.

Of the 55 vascular tumors reported 47 were hæmangiomata and 8 were lymphangiomata. The case records during the 22 years of the patient show that the

records in which the patient's sex is given show that the ratio of males to females was about 2:1.

Although it is believed that laryngeal angiomata are congenital and do not increase after the tenth year of age, the onset of symptoms has been reported most often after the twentieth year. The late onset probably indicates some exciting cause. Hoarseness is usually the first complaint. This may be intermittent if the tumor is vascular or may gradually increase during a period of years to aphonia. In one of the cases reported the symptoms preceded the diagnosis by three weeks and in another by nine years. In some cases recurrent hæmorrhage is the first symptom. Its severity depends upon the coagulability of the blood and the degree of vascularization of the tumor. Dyspnoea and pain are comparatively rare.

When limited to the larynx, angiomata usually involve only the true and false cords. When associated with angiomata elsewhere a laryngeal tumor may be outside of the larynx or involve one or more structures within it. A true cavernous hæmangioma is always dark blue or purple, rarely pedunculated, and usually smooth. As a rule it has a broad base, yields to the probe on pressure, and does not pulsate. This type may be attached to one or more laryngeal structures. Simple or superficial angiomata, flattened and limited to the mucous and submucous structures, may involve nearly the whole larynx and part of the trachea.

As a rule they are purple; seldom red. Lymphangiomata which are pale or transparent are larger than hæmangiomata and more resistant to the probe. They may be smooth or papillary. Case reports indicate that lymphangiomata are single but a single tumor may be lobulated. Varices present themselves as tortuous clumps of vessels which often are pulsating and usually are a brighter red than angiomata. It is not easy to differentiate simple varices from simple hæmangiomata but the cavernous types are distinctive.

As it is difficult to obtain case histories from children and as microscopic examinations are manifestly impossible, most cases reported have been diagnosed from clinical examinations. These may err, but there is less chance of a mistake in cases of lymphangiomata than in cases of hæmangiomata.

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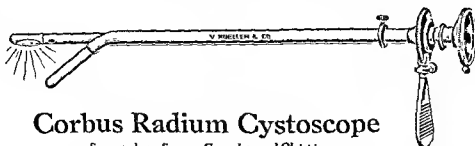
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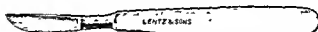
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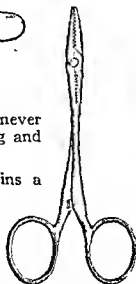
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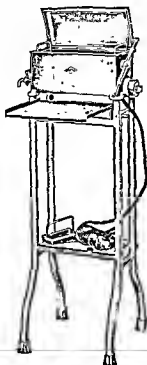
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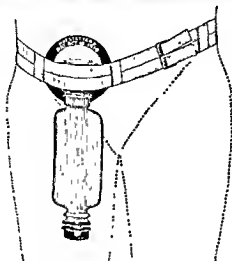
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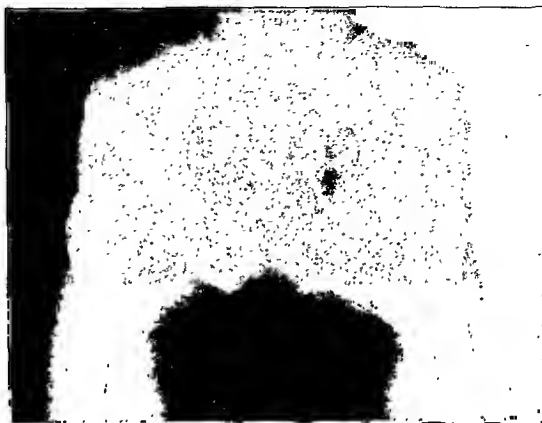
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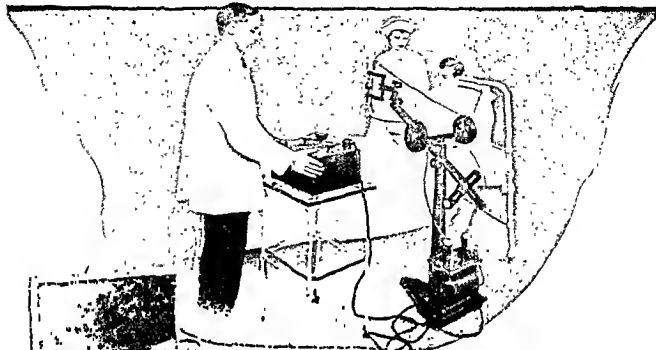
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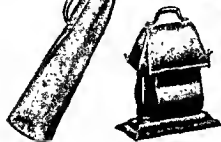
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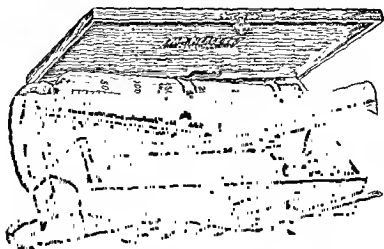
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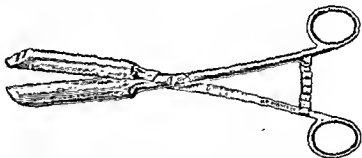
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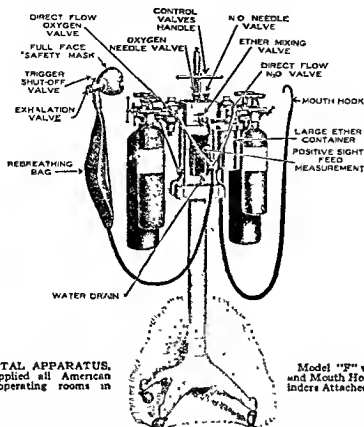
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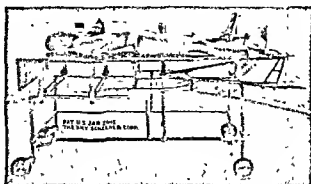
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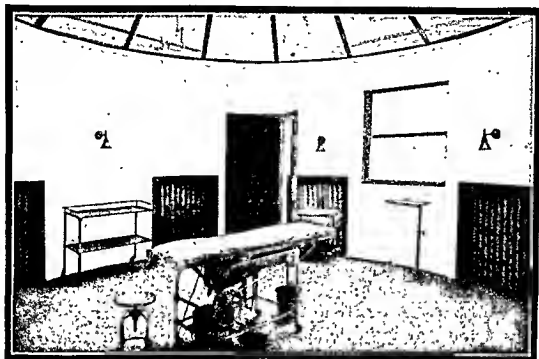
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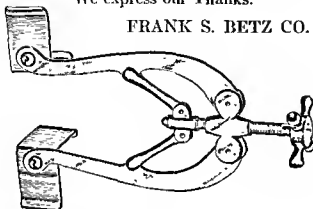
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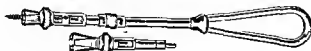
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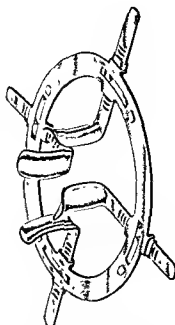


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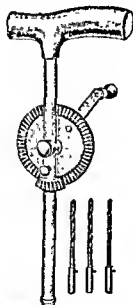
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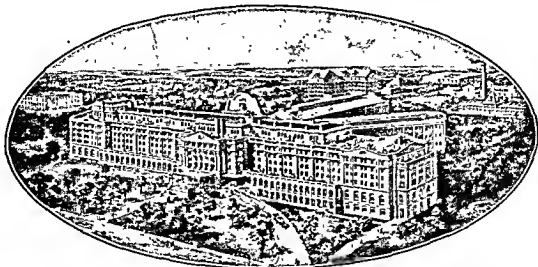
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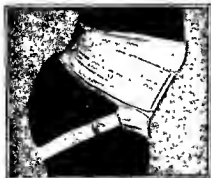
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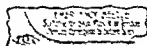
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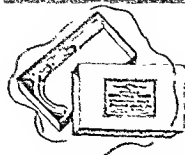
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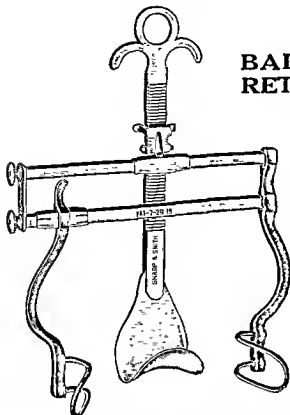
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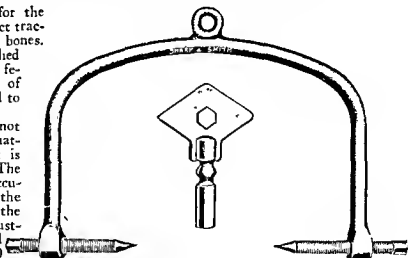
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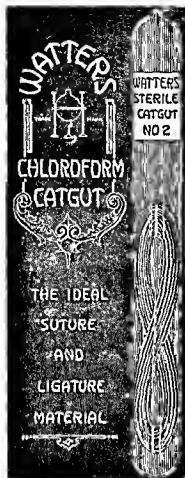
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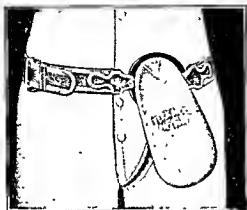


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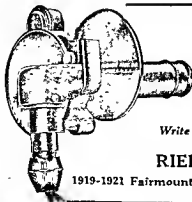
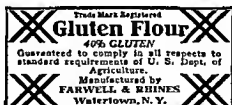
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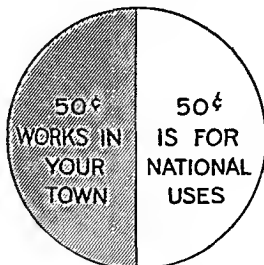
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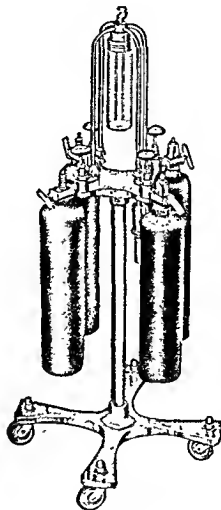
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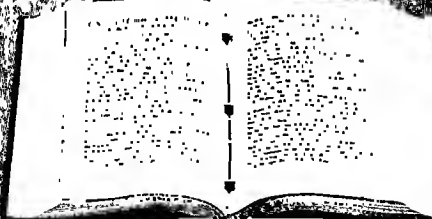
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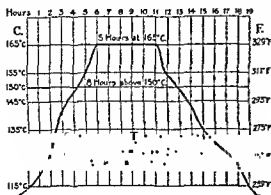
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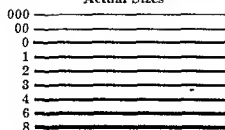
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The stones may be single or multiple. When multiple they are usually small and often resemble sand. Moynihan (33) states that as many as 300 stones have been found. These may be present in the small branches of the main duct. The larger ones are usually found in Wirsung's duct. Some measure 4 centimeters in diameter. Ruth (40) removed one at operation weighing 280 grams. The stones are generally firm and white or grayish white in color. Chemically, they are composed principally of calcium carbonate with a mixture of phosphates and cholesterin. A few stones contain also magnesium carbonate and calcium oxalate.

HISTOLOGY OF PANCREAS

A brief description of the histology of the pancreas will be helpful to a better understanding of certain of the pathological changes to be treated in this paper.

Like the liver, the pancreas originates as a diverticulum of the intestine. It communicates with that organ by means of the Wirsungian duct. The secretory part of the pancreas is composed of a branched alveolar gland whose walls are lined by irregularly triangular epithelial cells. The appearance of these cells varies with the functional state of the gland (4). The alveoli empty into the intermediate tubules which pass over into the intralobular ducts. These ducts merge into the excretory ducts which in turn empty into the pancreatic duct.

Within the lobules of the organ, lying between the acini, are groups of cells differing markedly from those of the ordinary glandular tissue. They were first described by Langerhans (24) in 1869 and have since been known as the islets of Langerhans. These groups, usually round, are composed of small irregular polygonal cells containing round or oval vesicular nuclei in which one or more nucleoli are present. Kuehne and Lea (23), from a study of injected specimens, demonstrated tortuous capillaries as the vascular supply of these islets. The cells are smaller than the secretory cells, are slightly granular, and are arranged in the form of anastomosing columns or trabeculae surrounding the relatively large tortuous capillaries with which

they are in very intimate relation. Lane (26) has demonstrated that there are two distinct types of cells in the islets which differ in staining reactions after proper fixation. The islet cells also differentiate themselves from the acinic cells. Dogiel (8) using Golgi's stain was able to prove the absence of ducts in the islets. Kuehne and Lea (23) on injecting the ducts found that the material had not penetrated into the islets. Opie (35) concludes that, although the islets have the same origin as the glandular acini, they are structures which are independent of the secreting apparatus. Prolonged stimulation of the gland does not transform groups of acinic cells into islets as was believed by Lewaschew (27). The conclusions of this author, that islets are temporarily exhausted acini which resume their acinic form after a period of rest, have not been corroborated by other investigators.

According to Opie (35) the islets are about $3\frac{1}{2}$ times as numerous in the tail or splenic portion of the organ as elsewhere. Their sizes range from 75 to 175 micra in diameter, although very large ones measuring 500 micra have been described. They are surrounded by fine connective-tissue capsules and, in general, show a resemblance to the glomeruli of the kidney in size, shape, and somewhat in structure. A marked difference, however, is noticeable in the lack of communication with excretory ducts; instead, they are in intimate relation with the lymphatics.

REVIEW OF THE LITERATURE

Experimental ligation of ducts. The study of this rather complex organ in its relation to diabetes has led to extensive experimental work. Arnozan and Vaillard (2) ligated the pancreatic ducts in rabbits and found that within 24 hours the ducts became dilated, the epithelial cells were desquamated, and there were protoplasmic changes in the acinic cells. At the seventh day there was beginning round cell infiltration, and at the fourteenth day a great deal of the parenchyma had been replaced by connective tissue. The authors thought that the sclerosis was due to the retained secretion. Sobolew (44) ligated the ducts in rabbits, cats, and dogs. He found a



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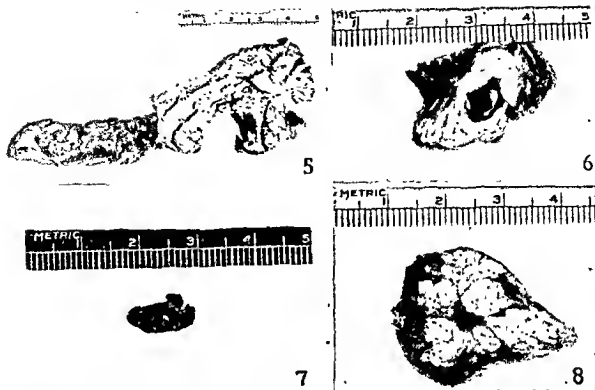


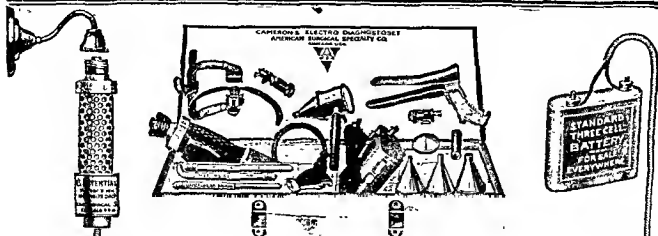
Fig 5 Photograph of pancreas from Case 4. All of the succeeding photographs and photomicrographs are from the same case. Note the narrow body and tail up to the point of obstruction by the calculus. A portion of Wirsung's duct has been opened.

Fig 6 Cross section of the pancreas in the region of the body. Wirsung's duct is enormously dilated. The wall

atrophy with beginning sclerosis. In the fifth week, very few nests of parenchyma were visible, and the entire organ was replaced by connective tissue. However, the islets were still intact in the connective-tissue stroma. After 10 weeks there was contraction of the connective tissue and fat cells began to appear. In about 15 weeks there was scarcely any parenchyma visible and there was considerable fat replacement. The islets, however, remained normal throughout. In contrast to the findings, following the extirpation of the gland, examinations of the blood and urine showed neither hyperglycaemia nor glycosuria present during any stage of these experiments. He concludes that the ligation of the pancreatic duct leads to a slow, progressive atrophy of parenchyma with replacement by connective tissue, until there is practically no acinic

structure left, but the islets remain intact. The animals suffered no digestive disturbances; they ate well and assimilated their food. They reacted normally after injection with adrenalin. The author is, therefore, convinced that the islets control the carbohydrate metabolism, since these animals appeared entirely normal as long as the islets were left intact for the production of the internal secretion; the profound alterations in the glandular portion of the pancreas had not had the slightest effect upon the utilization of sugar.

This author differs from Sobolew (44) and others in his results, in that they revealed an absence of sclerosis of the islets even in the late stages of his experiments. Kamimura's results are identical with those obtained by Schultze (42) who had conducted similar experiments many years before him.



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even further in successfully identifying the remnants of parenchyma as islets, by the use of Lane's (26) method of staining. She concludes that the islets are especially if not exclusively concerned with the maintenance of normal carbohydrate metabolism.

Experimental excision of pancreas. It is interesting to contrast the results obtained by excision of the pancreas with those obtained by a simple ligation of the ducts. Mering and Minkowski (32) as early as 1889 reported that total extirpation of the pancreas in dogs resulted in a severe and fatal diabetes. They believed that this result obtained from a lack of some substance which the pancreas secretes directly into the blood stream. Fahr (12) found that the gradual extirpation of the gland results in hypertrophy and hyperplasia of the remaining islets. Epstein and Baehr (11) found excessive hyperglycemia in cats after total extirpation of the pancreas. The animals developed great thirst. The blood sugar rose from 0.084 per cent to 0.838 per cent within 6 days. The glycosuria gradually diminished, a condition which they assumed to be due to a diminished permeability of the kidneys.

It has been found that the extirpation of the pancreas in a gravid dog often results in no diabetes until after the birth of the puppies, when a fatal diabetes ensues. This would tend to show that the pancreatic hormone passes from the foetus to the mother. In human cases of diabetes, women sometimes show an increased sugar tolerance during pregnancy which disappears after the birth of the foetus.

In transplantation experiments, the trans-

ever, has been followed by diabetes. Examination of the excised sclerosed tissue in these cases has shown that the islets had remained intact.

Pathology of the pancreas in diabetes. Bearing in mind the lesions encountered in the above mentioned ligation and extirpation experiments, let us pass over to the changes observed in spontaneous diabetes in man.

Cecil (6) working in the pathological laboratory of the Presbyterian Hospital, New York City, found that 87 per cent of the 90 cases of diabetes studied at postmortem showed definite lesions of either sclerosis or hyaline degeneration of the islets. Of these, the former was the most common. Eleven, or 13 per

cent of the cases were found to be diabetics as found by a large number of observers (Opie, 35a).

Heiberg (15) studied two cases of diabetes which resulted fatally, and found no noticeable changes present in the pancreas. He (16) found, however, that there were less than two-thirds as many islets in the tail of an apparently normal pancreas from a diabetic case as from a non-diabetic one. He, therefore, emphasizes the importance of the quantitative study of the islets as well as the qualitative. In our laboratory we have often been impressed with the scarcity of the islets in pancreases of diabetics in which the visible islets present no definite lesions. If it be assumed that there are cases born with a reduced number of islets, then such cases would be potentially congenital diabetics and would lack the normal functional reserve for proper carbohydrate metabolism. Such cases would require a relatively slight metabolic disturbance to bring about an actual glycosuria and hyperglycemia. It is also possible that changes in the islets sufficient to produce an abnormal secretion may not be recognizable histologically in some cases. For, in our present state of knowledge, the existence of "functional" disturbances which present no characteristic gross or microscopic lesions cannot be denied. Nor can one overlook the fact that the pancreas may not be the only organ involved in the production of the disease. But this much has been observed to be true, both from experimental work and from clinical experience (as is well pointed out by Opie, 37) that, whenever diabetes is caused by a lesion of the pancreas, the lesion always involves the islets; and, conversely, whenever that organ is diseased, but diabetes is absent, the islets remain relatively free from involvement.

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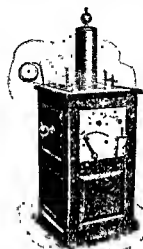
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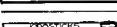
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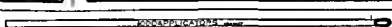
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blood sugar was 0.37 per cent. At the autopsy

sclerosis extended for some distance into the several pancreatic branches. The pancreas showed extensive fat infiltration between the lobules which were greatly reduced in size (pancreatic lipomatosis). Some lobules were reduced to only a few acini. In the centers of the larger lobules there were patches of fibrosis (Fig. 4), in which practically no normal acini or islets remained. Fine bundles of connective tissue radiated between the acini toward the peripheries of the lobules. Some of the blood-vessels, probably branches of the splenic artery, showed sclerosis. The greatest change was visible in the

which involved the acini as well as the islets, suggested the patchy fibrosis of the heart muscle following severe sclerosis of the coronaries.

The universally admitted facts, that the islets of Langerhans are involved in at least a majority of the cases of diabetes and that no case of alteration of the islets is encountered without an accompanying diabetes, make it evident that the islets secrete some substance or hormone into the blood which is necessary for the utilization of sugar by the tissues. Carlson (5) states that all evidence supports this view, and that true diabetes in man is primarily the result of pancreatic (islandic) deficiency. Hoppe-Seyler (18) believes that not only do changes in the islets determine diabetes mellitus, but that the degree of these changes determines the intensity of the disease, so that in the more severe cases the islets may be almost entirely destroyed.

CASE 4. Pancreatic lithiasis. A disease which offers exceptional opportunity for the study of the microscopic changes in the pancreas, especially with reference to the relation of the islets to the acini and their ducts, is pancreatic lithiasis. I had the good fortune to encounter accidentally such a case while doing routine autopsies. The lesion, by its very nature, being of long standing, presents

gradually progressive changes in the parenchyma that could be obtained in no other way, not even by experimental ligation of the ducts in animals.

This case is that of R. C., about 40 years old, who was brought to the Minneapolis City Hospital in coma at 3.30 p.m., on August 23, 1919. He had been found lying unconscious on the floor in his room. It was stated by an acquaintance of his that for several days he had not been well, and that he had been seen staggering about. During the last day or two he had not been seen at all until he was found lying unconscious in his room.

Physical examination at the hospital revealed a well developed but poorly nourished male, lying comatose in bed, but quite restless at times. The face was flushed; the expression distressed and anxious. Respiration was labored and at the rate of 28 per minute. The mouth was dry. The eyes were sunken; the pupils were dilated and equal, and reacted sluggishly to light. Blood pressure was 98/68. Examination of the urine gave albumin +, sugar ++, acetone and diacetic acid present. Examination of the spinal fluid was negative. The temperature between 97° and 99.4°F. Pulse 94 to 115. A diagnosis of diabetes with diabetic coma was made. He died at 6:30 p.m., on August 24, just 15 hours after admission.

The principal findings at the autopsy were as follows. The body was that of a well developed, fairly well nourished male, past middle age. There was no edema and no jaundice present. There were large encrusted ulcers from 3 to 15 millimeters in diameter scattered over both shoulders, upper left chest posteriorly, and over left chest anteriorly. Some of these crusts are more than 5 millimeters in thickness, and on removal leave deeply punched-out ulcers. There is dark pigmentation of the skin over both hands from the middle of the forearms downward.

round outside of the pancreas. This organ shows a marked atrophy of the corpus and caudal which appear cylindrical, like a piece of rope, together measuring 11 centimeters in length and about 15 millimeters in diameter (Fig. 5). The corpus ends abruptly in a bulbous caput of about normal proportions, measuring 3.5 centimeters in diameter. On section the corpus and cauda are found to consist of a cylindrical tube possessing a fibrous wall from 3 to 5 millimeters in thickness. Minute opaque areas of parenchyma are visible over the cut surface. The lumen of the tube has a smooth

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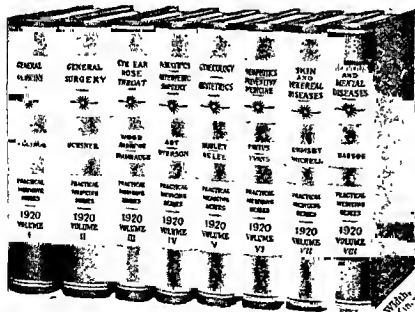
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of the ducts, *per se*, does not result in glycosuria, but that only in the later stages, when an interstitial pancreatitis is superimposed, does diabetes ensue (Atkinson and Hirsch, 3).

Attempts at regeneration of the pancreas the
slets
vor-
able conditions is not certain. In the case under discussion, the regeneration progressed only as far as the formation of atypical acini.

ETIOLOGY AND SYMPTOMS

The formation of pancreatic stones has not been entirely explained, although bacterial infection undoubtedly plays an important part. Inflammatory changes in the ducts may produce a collection of material composed of exudate mixed with desquamated epithelial cells which may act as a nucleus upon which lime salts may crystallize. Kinnicutt (21) believes that pancreatic lithiasis is very probably infectious in origin. However, it has been found impossible to produce stones experimentally in animals.

Pain is a common symptom in stones of the pancreas and may be slight or severe and paroxysmal. Nevertheless, calculi have been found at autopsy in which there had been no history of any definite symptoms. The pain is generally localized in the epigastrium. Often the attacks are accompanied by nausea and vomiting. Chills and fever may or may not be present. A number of cases where jaundice has been associated with pancreatic lithiasis is on record. This was usually due to the presence of gall-stones simultaneously with the pancreatic stones. Sometimes the pancreatic stones by pressing against the common bile duct from without have brought on obstructive jaundice (Rindfleisch, 39).

Glycosuria and hyperglycemia in most cases appear late in the disease, after there is an involvement of the islets by an intralobular pancreatitis. The diabetes may become of a very severe grade, as in the two cases reported by Heiberg (17). Transitory glycosuria is common early in the disease, during or immediately following the attacks of colic. Alimentary glycosuria, as revealed especially by the sugar tolerance tests, is a significant

and frequent finding. Steatorrhea is fairly common.

Keuthe (20) emphasizes Schmidt's test—the persistence of the nuclei in the muscle fibers found in the feces—as a valuable diagnostic aid in conjunction with the sugar tolerance test. The finding of small white concretions in the feces makes the diagnosis certain. Zesas (45) believes that colic in the upper part of the abdomen associated with the passage of stones by the bowel is an early symptom. Glaessner (13) diagnosed two cases by this method. Skaller (43) found stones in the feces in one of his four cases of pancreatic lithiasis.

TREATMENT

As already mentioned, only a few cases of pancreatic calculi are diagnosed clinically. Of these, the treatment is entirely symptomatic other than surgical. The latter treatment has been successful in a small number of cases. Murray (34) operated on a patient for gall-stones, but found none present. After a severe attack 6 weeks later, he again operated, removing a stone from the pancreatic duct 12 millimeters in diameter. His patient made an uneventful recovery. Link (28) in one of his cases, found the head of the pancreas to be the size of a fist, and gritty like a sack filled with gravel. On opening the duct of Wirsung he found it greatly dilated and filled with faceted stones, the removal of which resulted in the recovery of the patient. Allen's case (1) at operation presented cysts the size of an orange, due to obstruction of Wirsung's duct by calculi. This patient died 5 days after the removal of the stones. Dowd (9) reports a case in which 30 soft mulberry-like stones embedded in pus were removed at operation from the pancreas. Similar stones had been passed in the feces. The patient made a good recovery. Phillips (38) describes a case which had been operated on for gall-stones but none was found. The jaundice persisted and sugar appeared in the urine. The patient died in coma. At autopsy numerous stones were found in Wirsung's duct. Ruth's (40) case made good recovery after removal of a number of stones from the pancreatic duct, the largest of which measured

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of the ducts, *per se*, does not result in glycosuria, but that only in the later stages, when an interstitial pancreatitis is superimposed, does diabetes ensue (Atkinson and Hirsch, 3).

Attempts at regeneration of the pancreas manifest themselves in the hyperplasia of the ducts (Fig. 12). Whether or not new islets may be formed in this process under favorable conditions is not certain. In the case under discussion, the regeneration progressed only as far as the formation of atypical acini.

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In the experience of those doing primary

make cultures of all projectiles removed at operation, but in the several of which cultures were made, all showed organisms of greater or less pathogenicity. In the patients of this series, all of whom were operated on many months after the injury, infection was still the condition causing greatest trouble. In 7 cases the foreign body was removed and cultured, in 4 of these there was bacterial

body, an abscess at the site of the bone fragments was drained, cultures from which gave bacterial growth

Organisms were found in various stages of activity, ranging from the entirely dormant stage, Case 6, through the small abscess not causing symptoms, Case 1, to the large abscess, with prominent pressure symptoms, Case 2, and the abscess with pressure symptoms and septicæmia, Case 8.

It has long been recognized that the mere presence of a foreign body in the brain is not incompatible with life, nor does it necessarily disturb function. In the reconstruction work, however, it was planned to have all soldiers discharged in a condition as nearly normal as possible. The patient was always desirous of having foreign material removed from the brain if it could be accomplished without undue risk. In some instances the removal of the foreign body was necessary as a preliminary to the repair of skull defects, as it is unwise to repair defects if the brain contains foreign bodies.

Localization of the metal was accomplished chiefly through stereoscopic roentgenograms; the fluoroscope, however, was useful in the cases with large pieces of metal.

The operation was carried out in all cases, except Case 1, through a small incision. In Case 1 a unilateral suboccipital scalp flap was turned down, but only a small bony opening made.

The magnet was of less use in these cases than in the handling of cases immediately

after injury, since the foreign body in all of our patients was more or less firmly fixed in the brain tissue. This was true not only in those cases in which there was no infection, but also in those in which there was abscess formation. In Case 1 the bullet was plainly visible superficially in the right cerebellar hemisphere; the distal portion could be seen projecting into the abscess cavity, and the proximal portion firmly held in the wall of the abscess. In Case 2, in which there was a large abscess in the temporal lobe, the foreign body was not found in the abscess cavity, but located at a subsequent operation, firmly encapsulated in the posterior wall of the abscess. After dislodging the body, the magnet might have been used for the purpose of dragging it from the brain substance, where it rested at a considerable depth, but this was easily accomplished with a pair of alligator forceps.

Small folded rubber tissue drains were always immediately placed in the cavity from which the metal was removed. The metal was always carried directly from the brain to the culture tube and the culture examined daily for several days. If at the end of 96 hours there was no growth in the culture the drains were removed; but in the case of a positive culture the original drains were allowed to remain for a period of several months, during which there was always active drainage.

CASE 1. Pvt. P. L. Right occipital penetration by machine-gun bullet which lodged in the right cerebellar hemisphere, extraction of bullet and drainage of abscess, recovery.

The patient was wounded September 27, 1918, and admitted to a front line hospital in good condition. There was no attempt made at that time to remove the bullet.

When brought under observation at General Hospital No. 2, Fort McHenry, Maryland, in April, 1919, the roentgen-ray findings (Figs. 1 and 2) were the only clinical evidence of the presence of the bullet. Removal of the missile was advised because of its large size and the fact that the procedure seemed to offer no difficulties.

Operation, May 19, 1919. A unilateral cerebellar exposure was made (Fig. 3). After reflecting the right flap a small portion of bone was removed and a transverse incision made in the dura. There were

examination revealed a small abscess cavity in the



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operation was completed by loosely closing the wound about them

In entering the skull at this time great care was taken to work without coming in contact with the bulging cortex at the site of the previous decompression. The bony opening of the skull made for the removal of the body is seen in Fig. 7 at c

The postoperative recovery was entirely satisfactory. There was profuse drainage at the site of the first operation and slight drainage at the site of the second operation for many weeks.

After recovery from the immediate effects of the

however, and it is fair to suppose that the lack of symptoms of increased pressure was due to the very gradual enlargement of the abscess. The decompression on January 21, 1919, certainly bridged a critical period, as did the opening of the abscess in the left malar region on January 29, 1919, for the bulging at the site of decompression and drainage in the left malar region

sinus

The method of attack in draining the abscess was somewhat different from that usually adopted, and gave excellent results, because of the low position of

right frontal region, small metallic foreign body and bone fragments in the cortex, small traumatic cyst, operation removal of metallic and bony foreign body, recovery

The patient was injured November 6, 1918, and immediately after the injury was operated on at Mobile Hospital No 1. His recovery was good.

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body

Operation, July 12, 1919, removal of metallic foreign body. The bony foreign bodies were not located

Operation, August 12, 1919, evacuation of traumatic cyst. During the search for the bony foreign bodies a firmly walled cyst, containing about 20 cubic centimeters of clear fluid was encountered. The cyst was evacuated and a search made for the bony foreign bodies, but without success. With a syringe, fluid was aspirated from and air immediately injected into the cyst and a roentgen-ray plate made. In Figure 11 the outline of the cyst is definitely seen and below its lower portion the distinct shadows of the bony foreign bodies.

Operation, August 27, 1919, removal of multiple bony fragments from right frontal lobe. The cyst

of the cavity and the operation completed.

Cultures of the fragments were negative for bacterial growth, and there was no drainage at the site of the wounds. The rubber tissue drains were removed a few days after the operation. The operative recovery was satisfactory, but the patient continued to complain of headaches, and there was slight bulging at the site of the defect 4 months after operation. Repair of the skull defect will be postponed until there is no bulging.

The localization of the bony fragments was greatly facilitated by the injection of air into the cyst, as can be seen in Figure 11. The cyst cavity was distinctly outlined above the bony fragment shadows, so that it was evident the fragments were to be found in the cerebral tissue well below the inferior border of the cyst.

CASE 4. Sgt. F. J. G. Gunshot wound in left occipital region, small metallic foreign body in left temporal lobe, operation, removal of metallic foreign body, recovery.

The patient was injured October 1, 1918. At a

with diminution of sensation.

He was admitted to U. S. General Hospital No. 2, Fort McHenry, Maryland, January 15, 1919. The paralysis had cleared up. There was right

Operation, June 1, 1919, removal of small metallic foreign body, left temporal lobe. An incision 4 centimeters in length was made over the left temporal region defect, which was slightly enlarged backward. The dura was opened above the middle meningeal artery, and there were fine adhesions between the dura and the pia-arachnoid. The metallic body was easily located at a depth of 8 millimeter in the cortex. The metal was placed in culture immediately after removal. Recovery was prompt; and as there was no bacterial growth in the culture media after 96 hours, the drains were removed.

CASE 5. Pvt. R. R. Gunshot wound in mid-frontal region, metallic foreign body deep in the substance of the left frontal lobe, operation; removal of the metallic foreign body and repair of defect of skull, recovery.

The patient was injured on October 4, 1918, his steel helmet was penetrated and he was immediately rendered unconscious. For a short period there was

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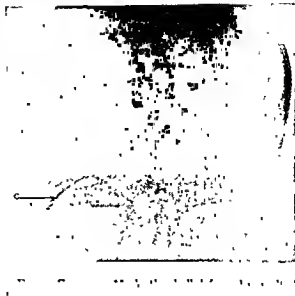
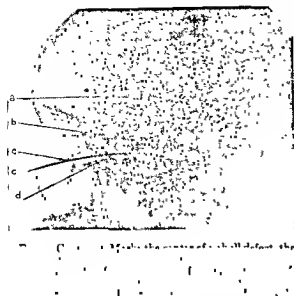
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He was admitted to U S General Hospital No 2, Fort McHenry, Maryland, April 2, 1919. The neurological examination was negative, except for headaches and slight mental change. The patient was inclined to treat his condition lightly, was co-operative, but seemed rather irresponsible. There was a large pulsating defect (Figs 14 and 15). Three shadows indicating metallic foreign bodies were seen in the roentgen-ray plates (Figs 14 and 15). In addition there were many small foreign bodies, all of which were extracranial.

Operation, first stage, July 10, 1919, exploration for metallic foreign bodies in left frontal lobe. As the bodies were not easily located, silver clip markers were placed on the divided dura and stereoscopic roentgen-ray plates made again.

Operation, second stage, July 14, 1919. Two large metallic foreign bodies to the lateral side of the left temporal lobe were found firmly encapsulated at a depth of 1.5 centimeters below the surface of the cortex. They were removed with some difficulty, as the surface of the bodies obtained was very rough, and great care was necessary to avoid traumatizing the cortex. Rubber tissue drains were placed to the depth of the cavities from which the bodies were removed and the wound closed. The metal was immediately placed in bouillon culture.

Twenty-four hours after operation staphylococcus albus was found in the culture, and there was a free

fragment

Operation, November 26, 1919, drainage of traumatic cyst of left frontal lobe. The left frontal lobe was explored through a 4 centimeter incision over the lower portion of the defect in the left frontal bone, and extensive adhesions were encountered between the dura, the cortex, and the floor of the anterior fossa. The dissection was carried to within a few millimeters of the foreign body, when there was a free flow of fluid, due to the rupture of a cyst. As communication with the ventricle was suspected and the presence of dormant organisms feared, small rubber tissue drains were placed to the depth of the wound and the operation terminated; on the rubber tissue drains small silver clip markers were placed.

Immediately after the operation there was a slight rise of temperature and headache and postcerebral rigidity. This condition continued until the fifth day, when there was a gradual clearing up of all troublesome symptoms. There was free drainage of fluid containing staphylococcus albus at the site of operation. The roentgen-ray plates (Fig 16) showed the silver clip markers placed on the rubber tissue drains on a plane horizontal with and 8 millimeters anterior to the metallic foreign body. Drainage at the site of the frontal exploration ceased January 1, 1920, though the drain was not removed. The general condition was satisfactory; there was no headache and the temperature and pulse were nor-

practically negative, except for the evidence of mental deterioration as noted above.

yellow gelatinous fluid in left lateral ventricle

In this patient the ventricle was evidently penetrated at the time of the injury, since there was a

SURGERY, GYNECOLOGY AND OBSTETRICS

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THE RELATION OF THE ISLETS OF LANGERHANS TO DIABETES WITH SPECIAL REFERENCE TO CASES OF PANCREATIC LITHIASIS

By MOSES BARRON, M.D., MINNEAPOLIS, MINNESOTA

From the Department of Pathology, University of Minnesota, Minneapolis, Minnesota

ANY reference to the pancreas as secreting a hormone necessary for the utilization of sugar by the tissues of the body is misleading, as that function is, accurately speaking, exercised by only a very small portion of the organ, the so-called "islets" of Langerhans; so that what is generally understood as the relation of the pancreas to diabetes is rather the relation of the islets to that disease. And yet it should not be overlooked that in spite of a great abundance of proof from experimental and clinical studies, it has not been universally accepted that the deficiency of either the pancreas as a whole or of the specific portion of it, the islets, results in diabetes mellitus.

The purpose of this paper is to present examples of typical changes in the islets found in cases of true diabetes together with a detailed study of the histopathology found in a case of pancreatic lithiasis with special reference to the islets, and to correlate these findings with those recorded in the literature as obtained in experimental ligation of the ducts in animals. Such a combined study of clinical and experimental cases is of special advantage because of the similarity between the spontaneous and the induced conditions.

Pancreatic lithiasis is a very rare condition. Only a relatively small number of cases have been recorded in the literature, although Graaf speaks of it as early as 1667, and Mor-

gagni and Cawley recognized the condition in 1765 and 1778 respectively. Opie (35) found two cases in 1,500 autopsies. Rindfleisch (39) found 3 cases in a series of 2,000 autopsies. Zesas (45) in 1903 collected only about 70 cases from the literature. Of these, 7 had been diagnosed clinically. Einhorn (10) states that the clinical recognition of this disease is exceedingly rare; much rarer than the very rare condition itself. In our own laboratory, this was the first case found in a series of several thousand autopsies.

Gall-stones are generally found in the gall-bladder; they are rare in the ducts. Pancreatic stones, on the other hand, are found lodging in the ducts in the absence of a cystic diverticulum. It is probable that pancreatic lithiasis is more common than is suspected, but the condition is not recognized unless the stones are large enough to meet resistance. Small stones may be expelled into the intestine without any symptoms. A few large stones have also been found in the feces (13), but this is very much rarer than in the case of gall-stones.

In contrast to the relative frequency of gall-stones in the female, more than 75 per cent of cases of pancreatic lithiasis occur in the male. Lazarus (25) collected 57 cases from the literature of which 47 occurred in the male. He states that about 60 per cent are found during the fourth decade.

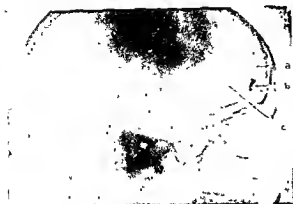


Fig 9. Case 3. *a*, Small defect of skull in right frontal region. *b*, Shell fragment lying superficially in the right frontal lobe. *c*, Bone fragment lying deep in the right frontal lobe.

sequestra at the depth of this sinus. Anterior to the opening near the mid-line were two metallic foreign body shadows (Figs. 17 and 18).

Operation June 8, 1919. excision of scar in right parietal region and removal of sequestra from right parietal lobe. Under ether anaesthesia the entire scar was excised and the sinus at the site of the defect explored to a depth of 1.5 centimeters. Small fragments of bone were encountered and removed. The sequestra were placed in culture media and rubber tissue drains inserted into the depth of the cavity from which the sequestra had been removed.

Forty-eight hours after the operation there was severe twitching of the muscles on the left side of the body without loss of consciousness. This cleared up after the administration of large doses of bromide of potassium. The cultures revealed staphylococci 48 hours after the operation. Following the operation



Fig 11. Case 4. *a*, Shell defect. *b*, Traumatic cyst into of bone fragments and foreign body.

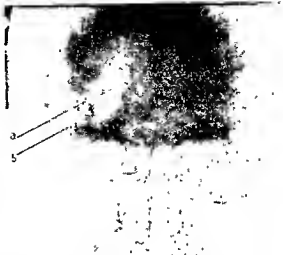


Fig 10. Case 3. Anteroposterior view of Figure 9. The letter indications are the same. The bone fragments cannot be seen in this plate.

there was some slight improvement of the hemiplegia. The wound continued to drain for several weeks.

Operation, August 29, 1919, removal of metallic

small foreign body was located at a depth of 2 centimeters below the dura. It was firmly fixed in a capsule. The large body was found 0.5 centimeter



Fig 12. Case 5. *a*, Skull defect through which the metallic foreign body, *b*, entered. *c*, A lead marker pasted on the lateral surface of the head. *d*, A similar marker placed over the superorbital ridge for the purpose of localizing in the stereoscopic plate the metallic foreign body.

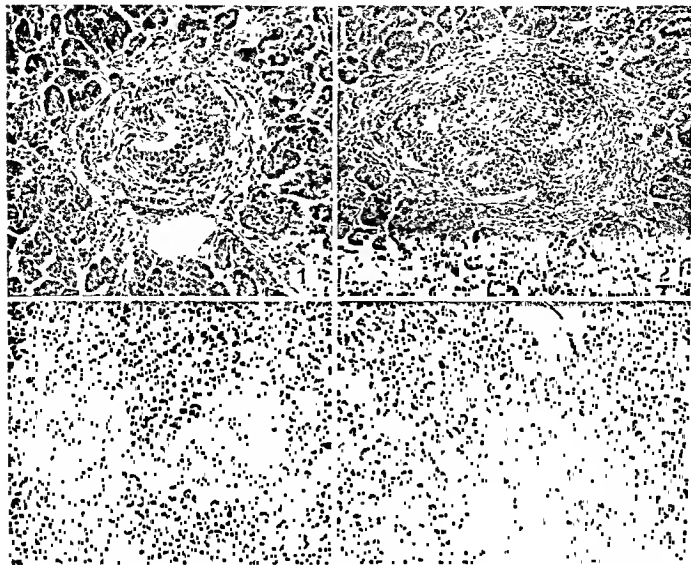


Fig. 1.¹ Photomicrograph of an islet from a section of the pancreas of Case 1. Note the fibrosis principally at the periphery of the islet. The epithelial cords in the center are still fairly intact.

Fig. 2. From same case as Figure 1. The fibrosis is considerably more advanced and there is a slight lymphocytic

have been completely replaced by hyaline material. A few epithelial remnants are visible. The patent capillaries are distinct. Several capillaries show greatly thickened hyalinized walls.

Fig. 4. Photomicrograph of a section from the pancreas of Case 3. The center of the lobule shows extensive fibro-

¹All photographs and photomicrographs were made by Henry W. Morris, of the Department of Pathology, University of Minnesota.

gradual atrophy and sclerosis of the organ with relatively intact islets and no glycosuria. However, in later stages, from 30 to 120 days after ligation, he found sclerosis of the islets accompanied by glycosuria. This was especially prominent after injection of olive oil into the ligated ducts. Mankowski (30) and Sauerbeck (41) obtained similar results.

fairly intact.

Kamimura (19) conducted very extensive experiments for the elucidation of the problem relative to the effect of duct ligation on the islets. His results are based on the study of one hundred rabbits. At the end of the first week after ligation he found very little change. At the end of the second week, the normal structure was lost—the tissue was scarcely recognizable as pancreas. There was

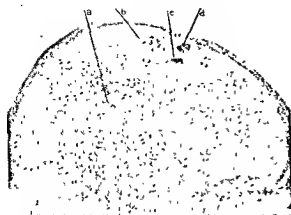


Fig. 17. Case 7. *a*, Small defect in right parietal bone. *b*, Small skull defect near the mid-line in which there are several small metallic foreign body shadows. *c* and *d*, Metallic foreign bodies in the cerebral cortex.

tremities. The patient was able to walk without assistance. His hand-writing was poor, very coarse and irregular. There were occasional headaches. At the site of the wound in the occipital region there was a small sinus from which yellow pus exuded. The roentgen-ray examination revealed a bone defect in the left occipital region. Beneath the defect there were several shadows, indicating bony sequestra deep in the brain substance, and a metallic foreign body (Figs. 19 and 20), just to the left of the mid-line in the anteroposterior plate, and about 2 centimeters above the shadow of the external auditory meatus in the lateral plate. Because of suppuration in the left occipital lobe, removal of the bony sequestra was recommended, while the depth of the metallic foreign body contra-indicated any attempt at removal.



Fig. 19. Case 8. *a*, Small defect in left occipital region.

containing bone fragments, *b*,

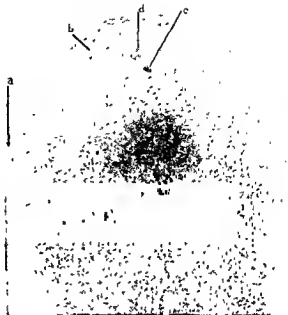


Fig. 18. Case 7. Anteroposterior view of Figure 17. The letter indications are the same.

Operation, June 5, 1919, removal of sequestra. Under ether anesthesia a small incision was made at the site of the sinus in the left occipital region. Several small sequestra were removed from a depth of about 2 centimeters. During this removal it was noted that the sequestra seemed to be lying loosely in the tissue. The fragments were immediately placed in culture media and small rubber tissue drains inserted into the cavity.

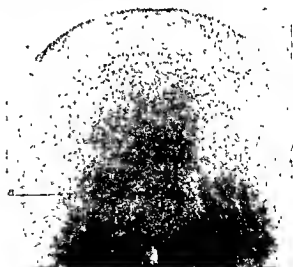


Fig. 20. Case 8. Anteroposterior view of Figure 19, showing the metallic foreign body at *a*.

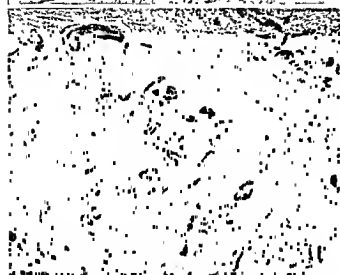


Fig 9. Photomicrograph of section from the region of the tail. The nerve bundles and the islets are very prominent.

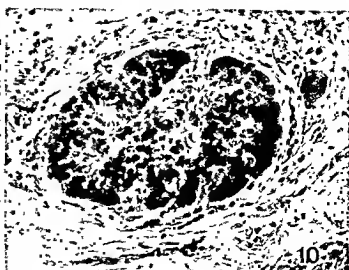


Fig 11. Low power photomicrograph from section in region of the corpus showing complete absence of parenchyma. The stroma is of dense connective tissue with practically no evidences of inflammatory reaction present.

epithelial cells are well shown.

MacCallum (29) performed an ingenious experiment of ligation and excision. He separated the distal third (tail) of the pancreas and ligated the duct draining this portion. Seven months later, when the separated part was found to be a mere thickening of the mesentery, the proximal (normal) two-thirds was excised. The operation was followed by a mild, transient form of glycosuria. Three weeks after the second operation, the thickened patch in the mesentery was removed. This time the operation was followed by a very extreme glycosuria. Microscopic

what atypical acini are present in lower portion of picture.

examination of the excised tissue showed remnants of atrophic pancreatic tissue in the mesentery consisting almost entirely of ducts and masses of cells that morphologically appeared to be islets. However, he could not be sure of their identity. This case is interesting for the fact that the islets from so small a portion of the pancreas seemed to prove sufficient, temporarily at least, to prevent any but a mild transitory form of glycosuria.

Kirkbride (22) repeated the above experiment on guinea pigs. Her results entirely corroborate MacCallum's findings. She went

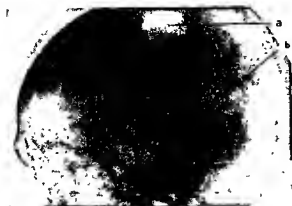


Fig. 25. Case 10. *a*, Small skull defect, the point of entrance of a pistol bullet 10 years previous. *b*, Thirty-two caliber bullet deep in the substance of the occipital lobe, not causing symptoms.

cultures from it showed streptococcus hæmolyticus. Cultures from other organs also showed the same growth.

The condition of the patient before the first operation, June 5, 1919, indicated the presence of an abscess in the left occipital lobe, which was causing

Fig. 26. Case 10. Anteroposterior view of Figure 25.

moderate disturbance. The operative manipulation is believed to have excited the dormant streptococcus hæmolyticus, resulting in an increase in the size of the abscess, general septicæmia, and the death of the patient.





Fig. 13. Photomicrograph of another section near the caput. Note the large group of atrophic islets showing degeneration and infiltration with leucocytes. On the upper right, there is a large nest of polymorphonuclear

Fig. 15. Photomicrograph of a section taken near the caput, showing a small nest of degenerating and atrophic acini still remaining in this region. There is a marked infiltration with polymorphonuclear leucocytes, lymphocytes, and a few plasma cells. The small islet shows degeneration and atrophy, which is probably due to the inflammatory reaction. The larger one is fairly normal.

REPORT OF CASES

CASE 1. Sclerosis of islets. A typical picture of a sclerosed islet, so often found in diabetes, is shown in Figure 1. The sclerosis begins around the tortuous capillaries by a proliferation of connective tissue between the endothelial lining of the blood channels and the epithelial cells. The epithelial cords become gradually atrophied and, in the late stages, disappear almost entirely, being replaced by hyalinized connective tissue. Figures 1 and 2 come from a case of a young woman, 21 years old, a student, who had been sick for 4 months, suffering from excessive thirst, increased appetite and loss of weight. She had not consulted a doctor until shortly before death. Urine examination showed 3.6 per cent sugar with large amounts of acetone and diacetic acid present. There was marked hyperglycemia. At autopsy the pancreas weighed 50 grams and showed no gross lesions. Microscopically the organ showed an entirely normal picture except

the capillaries; others showed a definite thickening of the capsules with an infiltration of a few lymphocytes; while the late stages showed an almost complete fibrosis of the islet with only a few scattered epithelial cells visible (Fig. 2).

CASE 2. Hyaline degeneration of islets. Figure 3 is from a case of diabetes in which the hyaline degeneration of the islets was very pronounced. A few remnants of epithelial cells are found scattered in some of the islets. This tissue was taken from a man 51 years old who had been sick in bed for 9 months because of prostration and weakness from diabetes. He suffered from a continual, intense thirst, frequent urination with polyuria and dyspnea. He had lost a great deal in weight. Examination of the urine showed large quantities of sugar present. At autopsy the pancreas was found slightly decreased in size. Microscopically the acini showed a slight atrophy with a mild patchy increase of interacinar, hyalinized connective tissue. Practically all of the islets had undergone hyaline degeneration (Fig. 3) appearing as irregular minute foci of hyaline substance in a few of which were scattered isolated atrophied epithelial cells. Many of the capillary lumina remained patent. Not a single normal islet was found in the sections.

CASE 3. Arteriosclerotic changes in pancreas. Hoppe-Seyler (18) describes arteriosclerotic changes in the pancreas which result in diabetes. He considers the lesions to be comparable to the arterio-

REDUCTION OF OLD DISLOCATIONS OF THE HIP BY OPEN INCISION¹

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THE exact time at which an unreduced dislocation of the hip becomes old cannot be definitely stated. If the possibility of reduction by external means be made the criterion, the period for practical purposes, is too long, because reduction by manipulation or force has been accomplished in some cases many months after dislocation has occurred.

Reports of such cases, however, should not be accepted without close scrutiny, as investigations have shown that the records of many cases before the invention of the X-ray were of doubtful value.

Sir Astley Cooper's opinion was that, after 8 weeks, it would be imprudent to attempt reduction of a hip dislocation. A better

tions performed on human beings in recent years. Such operations show that as early as 4 to 6 weeks the acetabulum is filled with shreds of capsule and newly formed connective tissue and the head fixed in its false position by tissue of the same kind.

Experiments² on dogs have shown that, 14 days after dislocation, soft, newly-formed tissue usually fills the acetabulum. This tissue is much firmer in 3 or 4 weeks, and 8 or 10 weeks after the dislocation the mass becomes so hard that replacement is impossible without clearance of the cavity. It is true that these obstacles do not in all cases preclude reduction; but they furnish important reasons for its usual lack of success.

For the purposes of this paper, and because a definite time limit must here be placed, beyond which cases operated upon are considered old, 4 weeks has been decided on, earlier cases being considered recent.

Attempts at reduction by external manipulation and by forced traction have from the earliest times to the present, been occasionally attended by disastrous results, such as fatal hemorrhage from rupture of the

great vessels and fracture of the neck or shaft of the femur. These accidents have been reported with sufficient frequency to bring manipulation and power traction into disrepute and to give rise, since the era of antiseptics, to the belief that open operation is much to be preferred.

The first attempt to effect reduction by open operation was by Delagarde in 1861.³ In his case, the original injury occurred 5 months before and was complicated by a double fracture of the same femur which had subsequently united. The head lay in the sacrosciatic notch and caused intolerable pressure on the sciatic nerve. The head could not be restored to the socket and was, therefore, excised. The patient was relieved both of his pain and disability.

The pathological anatomy of these cases was studied in the middle of the last century, notably by Malgaigne and Tillaux, who demonstrated on the cadaver the pathology which has since been found so uniformly in cases operated upon. Fortified by this knowledge and encouraged by the measurable success at the time of the Listerian system, a few attempts at open reduction were made in the late seventies, all of which failed and ended in resection of the head of the femur with correction of the position of the limb so as to bring the stump of the neck near to or into the acetabulum.

In 1882, the first actual reposition of the head into the acetabular cavity was made by Polaillon. Unfortunately the patient died of gas bacillus infection on the fourth day. Since that time, there have been found in literature reports of 47 additional operations. To these may be added a case, not hitherto reported, in the practice of O. C. Gaub, of Pittsburgh, and the writer's case herein detailed, making 50 in all.

The first operations in this country were performed by the late Charles T. Parkes, of Chicago, and reported by A. J. Ochsner, his

¹ Volkmann, *Deutsche Zeitschr f. Chir.*, 1893-4, LVIII, 373² St. Bartholomew's Hosp. Rep., 1866, II, 183³ Read before American Surgical Association, May 3, 1900

is composed almost wholly of calcium carbonate, with only a trace of cholesterolin present. The point of the obstruction appears to be in the region of a sharp curve in the course of the duct where the accessory duct (Santorini) is given off, whenever that duct is present. Efforts to locate the duct of Santorini are not successful. The caput appears relatively normal, showing considerable masses of parenchymatous tissue (Fig. 8). Small whitish calculi are found obstructing a few of the smaller ducts.

The microscopic study of the pancreas at different levels proved of unusual interest. In the region of the cauda, the sections showed a dense stroma of fibrous connective tissue in which were scattered numerous islets of Langerhans. Many of these islets were almost entirely normal, although there was no vestige of acinic tissue around them (Fig. 9). Some islets were decreased in size, having been reduced to a group of only a few cells, while others were distinctly hypertrophied to two or even three diameters. Figure 10 shows one of these isolated normal islets. The columns of epithelial cells surrounding the capillaries are well shown. The entrance of a capillary into the islet is clearly seen on the upper edge of the picture. A very few lymphocytes and fewer plasma cells are present in the stroma. The nerve bundles are unusually prominent and appear approximated (Fig. 9). The very striking feature, however, is the almost complete absence of acinic tissue.

Figure 11 is from a section in the region of the corpus. One of the smaller ducts with its branches is well shown. There is a slight attempt at regeneration of pancreatic tissue. This is best seen in Figure 12, where one can almost trace the development of young, slightly irregular acini as huddling outgrowths from the terminal branches of the markedly hyperplastic ducts. This rather ineffectual attempt at glandular regeneration is quite analogous to the pictures often encountered in cases of portal cirrhosis of the liver, where the bile ducts also undergo enormous proliferation. Nothing was encountered to suggest attempts at regeneration of the islets.

Some areas showed beginning degeneration of the islets. Figure 13 shows an area in which a number of islets more or less atrophic and degenerated is imbedded in a dense connective-tissue stroma, free from acinic tissue, but in which there is an extensive infiltration of leucocytes. The large nest is composed mainly of polymorphonuclears, suggesting a rather recent infection. The more diffuse infiltration is composed mainly of lymphocytes, plasma cells, and a few eosinophiles.

From the study of the sections, it was quite apparent that degenerative changes in the islets were prominent only in those areas where an inflammatory exudate was present. In the areas of mere

Figure 14
twice the
is a dense

lymphocytic infiltration. This islet shows a moder-

ately advanced fibrosis with a definite atrophy of the epithelial cords. The capillaries are surrounded by layers of connective-tissue fibers. It is in a slightly less advanced stage of fibrosis than the islet in Figure 1.

Sections of the caput showed mainly normal parenchyma and, as is usual for this portion of the pancreas, very few islets were visible. Small nodules of atrophy and necrosis were scattered along those ducts that contained small calculi. Because of the presence of necrosis and very extensive leucocytic infiltration, mostly of polymorphonuclears, around these areas, one is led to conclude that these lesions were relatively recent in origin, and were probably associated with a local infection. Figure 15 shows a section taken from the corpus near the caput in which a small area of degenerating and atrophied acini still persists. The presence of degeneration and atrophy in the islet proximal to this area indicates its involvement in the inflammatory reaction. The distal islet is free from surrounding exudate, and appears fairly normal.

The study of this case reveals results that are remarkably similar to those found in experimental ligation of the ducts. The acinic parenchyma had completely disappeared in the tail of the pancreas where the atrophy and sclerosis uncomplicated by inflammatory reaction was most marked. Obviously, this area had been affected very early by the obstruction of the duct; nevertheless, the islets had persisted in a normal state (Fig. 10). In the body of the pancreas, and in the region of the head, where the pathological changes seemed to be more recent, there were evidences of infection, as revealed by the presence of extensive leucocytic infiltration. In these areas, the atrophy and sclerosis were accompanied by involvement also of the islets (Figs. 13, 14, 15). It is fair to assume that the diabetes very likely made its appearance at the time when the islets began to suffer. Cases of pancreatic lithiasis without diabetes (Allen, 1) are generally cases in which the islets remain free from involvement; in by far the majority of cases reported in the literature diabetes of a lesser or greater degree is associated with the lesion. The persistence of the islets at a time when there is a complete disappearance of the acini clearly demonstrates that they are structures entirely distinct from the acinic parenchyma and have no relation to the ducts. The consensus of opinion seems to be that simple obstruction

Preliminaries to reduction. In 4 cases the trochanter was chiseled through at the base, and after reduction had been accomplished, fixed back into place, once with screws and 3 times with silver wire. In 11 cases all muscular attachments were separated from the great trochanter, usually subperiosteally. In 30 cases, it was noted, that the acetabulum was emptied of its connective-tissue filling with scissors, knife, or curette. In one case it was said to be empty. In one case the acetabular content was not removed, and, in it, recurrence of the dislocation took place. Tenotomy of the adductors was resorted to in one case, and the chiseling of the rim of the acetabulum in another.

Reduction. The method of reduction is stated in a minority of the cases, only. In 13 cases it was by manipulation, in 3 by levers and manipulation, and 2 by strong hooks; and in 1 by pulleys. Reduction is said to have been easy in 9 cases and difficult in 8; in the remainder of the cases no statement is made on this point, but, from the description of the operation, it would seem to have been difficult.

After-treatment. Most of the patients were treated by extension, abduction, and external rotation, maintained by weight and pulley with side splint or by a plaster-of-Paris dressing.

Mortality. Only 3 patients died (6 per cent): (1) case of Polaillon, in 1882, died on the fourth day from gas gangrene, (2) case of Mikulicz, in 1895, died in 6 weeks, from sepsis with pelvic infiltration, (3) case of De Forest Willard, published in 1904, died in one week, from septic endocarditis.

FUNCTIONAL RESULT OF OPERATIONS

Of the 45 cases reported, 36 (80 per cent) had good results and 9 (20 per cent) had moderate improvement or poor results as follows:

	Cases
Perfect result	8
Excellent result	9
Good result	2
Great improvement	1
Considerable improvement	2
Good function but limited motion	3
Good function, but hip ankylosed	4
Greatly improved, but ankylosed	2
Early report, but very promising	1
Total	36

Some improvement, but ankylosed	2
Slight improvement	2
Poor function, hip ankylosed	2
Very poor result	2
Recurrence (re-operated upon)	1

Total	9
No report	2
Dead	3
Total	50

Of the 9 cases in which the operation could not be considered successful, one was performed on a girl of 12, for a luxation of 3 years' standing; one on a child of 10, for a luxation of 2½ years' standing; in 2 cases the suppurating head required excision some months later and in 1 there was long-continued suppuration with peroneal paralysis.

Author's case. The young man whose case furnished the motive for this paper is 10 years old, a machinist by trade. He was injured September 20, 1918.

An automobile in which he was riding was struck by a train and "turned turtle." The patient was

and he has kept in bed for 9 weeks with Buck's extension on the limb. He remained in the hospital 3 months when he was dismissed and taken to

sult. Two weeks later (February 21, 1919) he came to Mercy Hospital, Pittsburgh, as a patient.

inches), inversion, adduction. There was, however, but slight flexion. The head could be felt to roll under the femur. . . .

X-ray plates were made on February 28, which showed a dorsal dislocation of the hip with a nearly

The fracture of the femur had united in good position.

almost 5 centimeters in diameter. Moynihan (33), Gould (14) and Mayo-Robson (31) also report successful operations for pancreatic calculi.

It is of interest to note that there is little mention made of wounds troublesome because of fat necrosis as the result of the escape of pancreatic fluid. This may be partially explained by the fact that the secretion in these cases may be deficient in ferments.

SUMMARY

1. Pancreatic lithiasis is a very rare disease, which occurs mostly in males during the fourth decade.

2. The obstruction of the pancreatic duct leads to an advanced atrophy of the pancreas accompanied more or less by fibrosis. The islets may remain intact even when the acini disappear completely.

3. The islets are epithelial structures which are entirely independent of the acini and have no relation to or communication with the ducts.

4. Changes in the islets—such as degeneration, necrosis and fibrosis—generally occur late in the disease, probably as a result of a superimposed secondary infection, consequent to a prolonged stasis in the ducts.

5. In complete accord with the results obtained experimentally in animals, occlusion of the ducts by calculi in man does not result in diabetes mellitus unless there be actual injury to the islets.

6. Cases of pancreatic lithiasis presenting symptoms of hyperglycemia and glycosuria reveal definite lesions of the islets at autopsy.

7. The present study bears out the conclusions that the islets secrete a hormone directly into the lymph or blood streams (internal secretion), which has a controlling power over carbohydrate metabolism.

8. Attempts at regeneration of injured pancreatic tissue manifest themselves in a definite hyperplasia of the ducts.

9. The principal clinical findings in cases of pancreatic lithiasis are colic-like epigastric pains often associated with temporary glycosuria, steatorrhea, alimentary glycosuria, incomplete digestion of meat fibers as revealed by the persistence of the nuclei in muscle fibers in the feces, and, occasionally,

the presence of whitish or grayish pancreatic stones in the feces; the late stages are often accompanied by diabetes mellitus.

10. Operations on the pancreatic duct are often successful. The danger of fat necrosis as a result of the escape of pancreatic fluid appears to be negligible.

11. The histopathology of the islets in diabetes falls into three main types, which are, in the order of their importance, as follows: fibrosis, hyaline degeneration, and arteriosclerotic changes. The pathogenesis of these lesions may not be very dissimilar to that of nephritis when taken in the broad sense. The differences in the intensity of the pathological changes in the kidney as compared with those in the pancreas may be explained by the marked differences in the characters of the two organs. In the kidneys, any glomerulitis or other changes in the glomeruli are followed or accompanied by alterations in the tubules; no such changes affect the tubules or acini in the pancreas, since the islets are entirely distinct from the latter structures.

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In 7 weeks he was fitted with a brace which reached from the brim of his pelvis to his shoe.

In 8 weeks he walked about the ward, bearing weight on his limb, a partial peroneal paralysis persisting.

In 10 weeks he was dismissed from the hospital, a plate taken at that time showing the head of the bone in its socket.

He returned for examination on September 16 (almost 5 months after operation), still wearing the brace by day and carrying a cane. There was no shortening, but still some eversion. Two weeks later he discarded the brace.

He came back 6½ months after operation and then for the first time a shortening of ½ to ¾ inch could be demonstrated. The peroneal paralysis had disappeared and the patient walked with comfort.

On March 18 (11 months after operation), he was examined for the last time and the shortening was 1¼ inches, abduction 25° and flexion at the hip 35°. He walks with a solid gait and without pain and has for some months been working as an automobile repairman.

Preliminary traction with Buck's extension is of great service, the adhesive plasters being invariably attached to the thigh only, never below the knee, in order to obviate injurious lengthening of the ligaments of the joint. The effect of this traction is to draw the head of the femur more nearly to the level of the acetabulum, and not only to lengthen the connective-tissue bands which bind down the neck, but to stretch the shortened pelvofemoral muscles.

The occasional use of passive movements of the limb at the hip and knee also serves the purpose of breaking up recent and stretching old adhesions.

The question of whether to attempt reduction by external means (manipulation and traction) is very important and must be decided in each case on its own merits.

Those, like Poncet and many other eminent surgeons, who have had fatalities after the

dislocation has become ancient, the only safety lies in the open way.

Thus, also, is the opinion of those who have operated on such cases by open reduction, and have seen the acetabulum filled with connective tissue and roofed over with shreds of capsule, and the head and neck bound down with a dense fibrous growth. These latter have usually experienced great difficulty in

the return of the head to its socket, even after complete dissection has been made.

On two points there will be general agreement—first, that if efforts by the so-called bloodless method are made, the most extreme care should be taken to avoid undue violence; and, second, that an interval of a number of days should elapse between the failure of such an attempt and the performance of the bloody intervention.

CONCLUSIONS

1 Traumatic hip dislocations may be considered old at the end of 4 weeks.

2 Reduction by manipulation is rarely successful after that time, owing to formation of connective tissue, which fills the acetabulum and binds down the head and neck.

3 Reduction by open incision is to be preferred in nearly all cases of old hip luxations and with modern methods is attended with but little danger.

4 Preliminary traction by Buck's extension is of advantage.

5 The actual replacement of the head, after the acetabulum has been emptied and the head and neck released, is best accomplished by manipulation or the use of levers with manual and body traction (Fig 1).

6 The result is often ideal and, in the cases reported, has been good in 80 per cent.

REPORT OF CASES

CASE 1. 1887. Operated upon by Vecelli, Venice.

connective tissue, probably shreds of capsule, covered the acetabulum and head. An anterior vertical incision was made and the head and neck completely isolated. The patient died on the fourth day from gas gangrene.

CASE 2. 1887. Operated upon by Vecelli, Venice, reported in *Arch. d'orthop.*, 1887, also *Rev. d'orthop.*

duced. The obturator luxation was not operated upon. The patient recovered without complications and gait is satisfactory.

CASE 3. May, 1888. Operated upon by Charles T. Parkes, *North Am. Pract.*, Chicago, 1890, ii. 499. Male, age 21, suffered for one year from dorsal dislocation of the

GUNSHOT WOUNDS OF THE BRAIN WITH RETAINED MISSILES¹

By CHARLES BAGLEY, Jr., M.D., F.A.C.S., BALTIMORE

THE present report is an attempt to show what might be called the late results of metallic foreign bodies in the brain. During the period of the war, numerous communications set forth methods of handling cases of this sort at the primary operation immediately after the injury. Removal of the foreign material at the primary operation was universally advised if it could be accomplished without undue risk. As a result of the attempt at immediate, complete removal, a large majority of the patients returning to this country with gunshot wounds of the head, presented scars of varying degree without foreign bodies in the brain.

In a series of 192 patients with head wounds, which, except for a few accidents, were war injuries, 42 had metallic foreign bodies intra- or extra-cranial; 33 of the cases may be disregarded as the metal was superficial or in small particles, so that only 9 had retained metal of sufficient size and at a sufficient depth to demand serious consideration. These cases with an additional civilian with a retained pistol bullet, form the basis of this paper.

In reviewing the publications concerning primary operations, Harvey Cushing's paper² offers the best data for comparison. Accurate comparison cannot be made, since the series on which his data were based consisted of 219 cases, while our series numbers 192; but it is interesting to note the relative difference in the number of wounds of this type, the primary series furnishing 76 against 9 in the secondary series. These 9 cases are grouped according to the classification of the primary series into Grades V, VI, VIII.

Six of the patients of the secondary series were in Grade V, namely, wounds of penetrating type, with lodgment both of projectile and bone fragments. In the primary series, there were 41 cases in this grade. Five of the secondary cases, Cases 1, 2, 3, 5, and 7, were operated upon and recovered; the other

patient, Case 9, was discharged without operation because the missile was inaccessible and was not causing symptoms.

Two of the secondary cases were in Grade VI, namely, wounds with ventricles penetrated or traversed (a) by bone fragments and (b) by projectiles. In the primary series there were 30 cases in this grade. One of the secondary cases, Case 6, wounded September 29, 1918, was operated upon on July 14, 1919; two large bullet fragments were removed and when cultured gave staphylococcus growth. During a second operation, November 26, 1919, for the removal of another fragment, a large cyst in the frontal lobe was opened; the cyst communicated with the ventricle and cultures gave growth of staphylococcus albus. The patient died on January 10, 1920. The other patient of this grade, Case 8, wounded July 4, 1918, was operated upon on June 5, 1919, for the removal of bone fragments from the left occipital lobe. A shell fragment in the left cerebral peduncle did not seem to be causing symptoms and was inaccessible, so that no attempt at removal was made. The fragments removed gave streptococcus hæmolyticus growth, and the patient died on June 25, 1919, of septicæmia.

The number of secondary cases is too small to permit of comparison of mortality percentages, but it is interesting to note that the most serious grade in the primary series was the only grade in the secondary series in which there was mortality.

One of the cases of the secondary series was in Grade VIII, namely, wounds with cranio-cerebral perforation. In the primary series there were 5 cases in this grade. In one case, Case 4, the wound of entrance was in the right occipital lobe, from which location a large shell fragment was removed immediately after the injury. In the left temporal region, there was a small skull defect, evidently the point of exit of some portion of the shell, and near which lay the small shell fragment, which we removed.

¹ Brit. J. Surg., 1918, v, No. 20.² Read before the Southern Surgical Association, December, 1919.

The acetabulum was cleared with a sharp spoon. The head was replaced with difficulty by manipulation. The limb was encased in a plaster cast, in extension, abduction, and external rotation. The patient recovered from operation but suffered from considerable shock at first. He walked about on crutches in 6 weeks. In 3 months he walked well with a cane. Motion was limited but was increasing.

CASE 13. October, 1894. Operated upon by Riedel, reported in article by English, *Arch. Clin. Chir.*

wound was not closed. A lateral splint was applied. The patient recovered from operation. There was suppuration and sequestra were eliminated. There was some ankylosis in slight flexion, there was no shortening, and gait was good.

CASE 14. May, 1895. Operated upon by Mikulicz, Breslau, reported in article by Drehmann, *Beitr. f. klin. Chir.*, 1896, xvi. Female, age 36, was run over by a sled, 18 weeks ago, and suffered an acetabular dislocation. Unsuccessful efforts were made to reduce the dislocation 2 weeks after injury. Before operation the limb was useless. Examination showed much scar tissue, the acetabulum filled. A "snuff-box" incision was made, osteotomy

mass and fragments of bone. A low-shaped incision was made, the trochanter chiseled off, the acetabulum evacuated. Reduction was by manipulation easily accomplished, and the trochanter sutured. The limb was placed in extension in outward rotation. The patient suffered septic infection with secondary luxation and pelvic infiltration from which he died in 6 weeks.

efforts at reduction are recorded. Before operation the patient could get about but was much disabled. Examination

and reduction accomplished with difficulty. A double spica plaster-of-Paris was applied. The patient recovered from operation, convalescence was stormy. The joint was still when last seen, limb was present, but the limb was useful.

An antero external incision was made, the acetabulum cleared, the rim of the acetabulum chiseled off to permit reduction. The patient recovered from operation and was out of bed in 4 weeks, wearing a Volkmann's splint. The wound discharged for some time. There is shortening of 1 centimeter, flexion to 35 degrees, but the patient walks

well. The hip joint was not ankylosed. There was some suppuration. In 73 days there were movements, the patient walked without cane or limp, the limb was in slight flexion.

CASE 21. June, 1897. Operated upon by Kaufmann, Zurich, reported by Hoefliger, *Thésis de doct.*, Berne, 1900. Female, age 54, was struck 4 months ago by a

car, was very lame. Examination showed the acetabulum full, the epiphysis loose, the head tightly fixed. A transverse vertical incision was made, the acetabulum evacuated, the trochanter chiseled off, the dislocation reduced by manipulation, and the trochanter sutured. The limb was placed in a splint in extension and outward rotation. The patient recovered from operation, the wound healing by primary union. The patient walked well in 6 weeks.

bound down by fibrous tissue. A curved incision was made over the trochanter. An extension apparatus was applied. The patient recovered. There was some suppuration and

suppuration a double dislocation of the hip. No efforts made at reduction. The limb was absolutely useless. Examination showed the acetabulum filled with new tissue and remains of the capsule, the cartilage intact. Through an anterior incision, all muscles were separated from the

right cerebellar hemisphere which contained about 3 cubic centimeters of pus. Into the abscess cavity the distal two-thirds of the bullet projected while the approximate one-third was firmly encapsulated in the right wall of the abscess. The bullet was removed and immediately placed in culture media, examination of which later showed a growth of staphylococci. Folded rubber tissue drains were placed in the abscess cavity and brought to the surface at the outer extremity of the transverse incision.

Forty-eight hours after operation there was some headache and elevation of temperature. Drainage continued until November 1, 1919, when there was complete healing. At no time during this period was there evidence of disturbance of the cerebellum.

The case illustrates the course of a septic foreign body with a latent stage, through an attempt at autosterilization terminating in a serious inflammatory lesion. The abscess, which was found during the operation for the removal of the bullet 234 days after the injury, had not been suspected, since the patient presented no neurological disturbance. Had the operation been deferred until the appearance of troublesome symptoms, there would have been much greater destruction of the cerebellar tissue and the chances of immediate and ultimate recovery greatly diminished.

CASE 2. Pvt. E. M. Shell fragment wound left malar region, immediate recovery good, five months after injury there were symptoms of brain abscess; left subtemporal decompression, January, 1919; drainage of temporal lobe abscess, May, 1919. removal of missile in June, 1919, recovery.

The patient was injured by a bursting shell on August 17, 1918, and remembered nothing concerning his injury until several days afterward, when he found himself in General Hospital No. 9 at Rouen. He then had numbness over the area of distribution of the left fifth cranial nerve and weakness of the muscles of the left side of the face. Eight

ray photograph showed a metallic foreign body in the posterior inner border of the left middle cranial fossa (Figs. 4 and 5).

About January 15, 1919, the patient complained of severe headache and was somewhat drowsy. On January 19, the headache was more severe and the patient was very drowsy. His blood pressure, was 110 to 70 millimeters mercury. A lumbar puncture revealed fluid under slightly increased pressure, with 155 cells per cubic centimeter, negative bacteriologically. The leucocyte count was 15,000 cells per cubic centimeter. His pulse ranged between 45 and 56, and his highest temperature was 99.2°.

Operation, January 21, 1919. A left subtemporal decompression was done by Major A. R. Calvin and Major B. T. Stookey. Because of the critical condition of the patient only a short search was made for the foreign body. The operative recovery was tedious.

On January 29, 1919, a small abscess at the site of the original injury in the left malar region was incised. This tract remained open until after complete drainage of the temporal lobe abscess.

Operation, May 23, 1919, drainage of abscess of left temporal lobe. The previous decompression was hulging greatly so that the abscess could not be entered at this point. After resection of 1.5 centimeters of the left zygoma (Fig. 6) the point of entrance of the missile, in the floor of the middle fossa of the skull, was exposed. A probe passed through the sinus in the left malar region was used as a guide in locating the opening. The defect was increased by removing the lateral rim, when a dissector was passed into the brain substance, and a large amount of pus was evacuated. Only a hurried search was made for the missile because of the condition of the patient and the fact that the roentgen-ray indicated its position in the posterior inner part of this fossa. After evacuation of the pus a small rubber tube (Fig. 7, a) and several drains made of gutta-percha were inserted into the cavity. Around these drains the wound was loosely closed.

Following the operation, there was gradual return to consciousness, and the immediate recovery was quite satisfactory. Improvement of vision was noticed within a few days.

Operation, June 7, 1919, removal of metallic foreign body from left temporal lobe. An incision about 4 centimeters in length was made above and posterior to the left ear. The skull was entered at the extreme posterior part of the middle fossa; the dura was elevated from the posterior wall of the middle fossa to a depth of about 5 centimeters; the foreign body was not located. An incision was then made in the dura and the cortex of the temporal lobe elevated to a distance of 5 centimeters from the dura, and the metallic foreign body was encountered (Fig. 8). The body was firmly fixed so that a magnet was useless. After dislodging the metal it was seized in alligator forceps and removed. Small, folded, rubber drains were placed to the depth of the tract through which the metal was removed. The

of the right eye. There were numerous wounds, all of which healed promptly except the one in the left malar region.

He was admitted to U. S. General Hospital No. 2, Fort McHenry, Maryland, November 27, 1918, when the chief points of the examination were poor vision, especially of the right eye, unpleasant sensations and hyperesthesia over the area of the left trigeminal nerve and weakness of the muscles of the left side of the face. Over the left malar region, just below the outer canthus, there was a small scar which marked the site of one of the original wounds. The roentgen-

anterior and posterior incisions, reduction was accomplished by means of long blunt hooks and the fracture nailed. The patient recovered.

CASE 36 June, 1904. Operated upon by Dollinger, Budapest, reported in *Ergebn d Chir u Orthop*, 1911, III, 83. Male, age 48, 5 months ago suffered an obturator dislocation caused by a fall of earth. No attempts

showed a fracture of the pelvis, the acetabulum covered

slight adduction

motion

CASE 39 1906 Operated upon by Aslett Baldwin; reported in *West Lond M J*, 1907, VII, 33. Female, age 18, fell 3½ months ago, suffering a dorsal dislocation of the hip. No attempt had been made to reduce the dislocation. The patient presented the typical signs of dorsal dislocation. Examination showed the acetabulum completely filled with new tissue and the head firmly fixed in its new location. Through an anterior incision traction

and countertraction were applied, pressure was exerted on head, traction on neck with large hook. The patient recovered from operation. A Liston splint was worn 8 days, then sandbags and passive motion applied. The wound healed by primary union. Two and half months

in a plaster-of-Paris splint. There was superficial supuration. The splint was removed and the patient walked in 30 days. He had perfectly normal function when seen 3½ years later.

CASE 42 March, 1907. Operated upon by Gilbert

there was free motion and no lameness, 9 months later.

CASE 43 August, 1907. Operated upon by Streibler, Graz, reported in *Beitr z klin. Chir*, 1908, LVII, 571. Male, age 14, 11 weeks ago slipped and fell with his leg

corrected. Two and a half months after operation the patient walked well without support, movements moderate.



Fig 1. Case 1. a, Point of entrance; b, machine-gun bullet in right cerebellar hemisphere



Fig 2. Case 1. a, Machine-gun bullet in right cerebellar hemisphere.

weakness of the left leg. For several weeks this leg was easily exhausted. His memory was poor.

He was admitted to U. S. General Hospital No. 2, Fort McHenry, Maryland, February 7, 1919. There was a scar 11 centimeters in length extending across the frontal region at the hair-line; beneath the scar there was a large bony defect. Memory for recent events was slightly impaired; there was some disorientation for time. The deep reflexes were normal. The roentgen-ray revealed a metallic foreign body 0.5 by 1 centimeter and the large skull defect in the frontal bone (Figs 12 and 13).

Operation, August 14, 1919, removal of metallic foreign body. An incision 4 centimeters in length was made in the left temporal region and a small area of bone removed. The metallic foreign body, encountered at a depth of 3 centimeters within the cortex was loosely encapsulated and easily removed without bleeding or trauma to the cortex. The metal was immediately placed in culture and small rubber tissue drains placed to the depth of the cavity from which it was removed. Recovery was good. As there was no bacterial growth in the culture, the rubber tissue drains were removed on the fourth day. On September 9, 1919, the skull defect was repaired.

Postoperative recovery was good.

The patient was wounded September 29, 1918, by a rifle bullet; his steel helmet was penetrated and he was unconscious for several days. There were no focal symptoms.

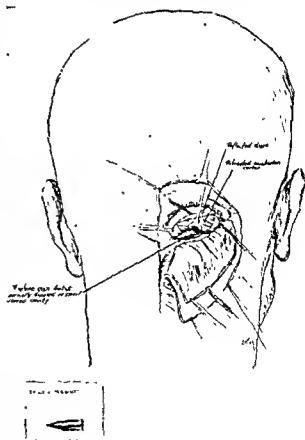


Fig 3. Case 1. The sketch shows the portion of the bullet which projected into the abscess cavity.

impatient and expressed a desire to have the body removed, rather than continue in an uncertain state. Actual removal offered little difficulty, and convalescence was quick in the absence of organisms.

CASE 6 Pvt. V. C. Fragmented rifle bullet in left frontal lobe; large skull defect, operation, July 14, 1919; removal of two large bullet fragments; second operation, November 26, 1919, drainage of traumatic cyst of left frontal lobe; death, January 10, 1920.

OBSERVATIONS ON CANCER OF THE RECTUM

BY ERNEST A. WELLS, M.D., F.A.C.S., HARTFORD, CONNECTICUT

THE writer has undertaken to make a few observations on cancer of the rectum based on the records of 53 cases, for the most part treated at the Hartford Hospital in the last 20 years. His interest has been stimulated by the fact that he has personally been able to follow a few of them over a relatively long period of time. Twelve of them have come under his personal care. Being under the observation of many doctors, the records obtainable are variable. For the most part, they are very incomplete and leave much to be desired. They have been taken, however, in seriatim. None has intentionally been omitted.

SEX

Of the 53 cases, the sexes are almost equally divided, 26 were males and 27 females. In the Hartwell series, 26 were males and 20 females. In studying the subject of cancer of the rectum, one must constantly think of a possible relation between syphilis of the rectum and subsequent cancer. It has occurred to me to compare data in these 53 cases with similar data in cancer of the tongue, wondering whether it may be possible to demonstrate any similarity in cancers of the two ends of the alimentary canal. One might be led to suppose that there would be some similarity because there is much in common in the embryology of the two regions. But in this very first matter of sex, we find a marked difference. In 22 cases of cancer of the tongue, occurring at the Hartford Hospital and recently studied by my brother, Donald Wells, 20 cases were males and 2 were females. There must have been just as much syphilis in the rectum as in the mouth and as much in females as in males. These figures seem to argue, therefore, that syphilis is not a cause of cancer and the discrepancy in the relative number of the sexes suggests very strongly that the other factor, namely smoking, is the reason for the preponderance of males in cancer of the tongue. It is interesting in

connection with this to remind you that cancer of the tongue does not appear in the literature until about the time of the discovery of tobacco, a date which also coincides closely with the appearance of syphilis in Europe.

AGE

The ages at which these patients entered our observation were as follows:

TABLE OF AGES

	Cases
20 to 30.	1
30 to 40	4
40 to 50	9
50 to 60	7
60 to 70	15
70 to 80	13
80 to 90	2
Not stated	2
	<hr/> 53

It is thus decidedly a disease of advanced age. Yet there appears one case at the age of 22. John Hartwell also reports one case at the age of 23 and Watson reports cases at 17, 20, 21, and 23 years of age.

That a patient should suffer from cancer of the rectum at 22 seems, however, rather remarkable and perhaps suspicious. Yet the records of this case of ours are rather more complete than most of the series and prove to my mind beyond reasonable doubt that it really was a case of cancer of the rectum.

This girl was married, age 22, and first came under our observation August 1, 1908. She had been in the hospital a few weeks previously, and the diagnosis on this admission was ulcer of the rectum. It is recorded that she refused operation and left against advice. The patient was re-admitted within a week or two. On this occasion the sphincter was stretched and a mass was felt just inside the sphincter, bulging into the vagina. A section was removed for microscopic examination and the specimen was reported adenocarcinoma. Patient again left the hospital against advice.

It appears that she next went to another hospital where the growth in the rectum was removed. The result, however, was unfortunate as she became bedridden, was unable to lie on her back, and was re-admitted to the Hartford Hospital 1 year and 3 months later in a pitiable condition and soon died.

large communication between the cyst and the ventricle at the time of the second operation. After removal of the large fragments at the first operation there was active drainage, but the inflammation was well taken care of by the brain tissue. Drainage of pus was to be expected after the second operation, and it is believed that there would have been no difficulty except for the communication with the ventricle, which made complete drainage impossible. Obliteration of the cyst with distention of the ventricle at autopsy seems to bear out this opinion.

CASE 7. Corporal A. L. Metallic and bony foreign bodies in right parietal lobe near the mid-line; left hemiplegia, severe headaches; operation; removal of metallic and bony foreign bodies; improvement of hemiplegia and headaches; recovery.

The patient was wounded October 22, 1918, by a machine-gun bullet and was unconscious for 5 days.

He was admitted to U. S. General Hospital No. 2, Fort McHenry, Maryland, April 3, 1919. In the roentgenogram the bullet was seen extending from the right parietal lobe to the mid-line and the other low in the parietal region (Figs. 17 and 18). At the site of the defect, near the

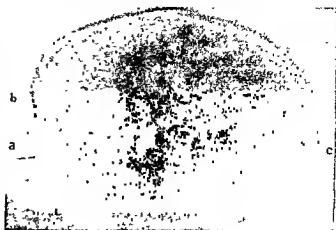


Fig. 7. Case 7. Rubber drainage tube inserted into

mid-line, there was a small sinus from which there was a slight amount of pus exuding. In the roentgenogram there were shadows suggesting bony

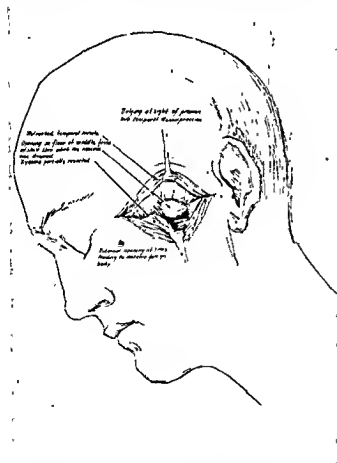


Fig. 6. Case 2. Diagrammatic sketch showing resection of zygoma and defect in floor of middle fossa of skull, through which the abscess was drained.

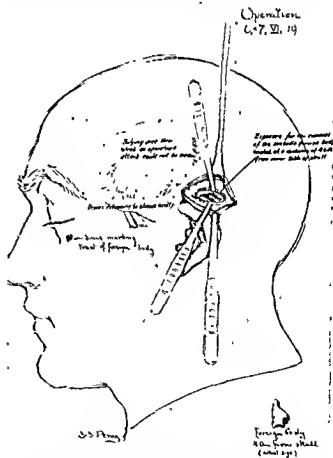


Fig. 8. Case 2. Diagrammatic sketch showing the operative wound through which the shell fragment was removed from a depth of 5 centimeters in the left temporal lobe.

wound of approach. He says that during the last 5 or 6 years he has operated upon several cases by this method and he believes it is a method that should be adopted in beginning small carcinomata of the rectum without serious involvement, that, if he himself had such a condition, he would prefer this operation done thoroughly to any other. He says that he has a number of cases alive and well 2, 3, and 4 years after these cautery operations in the lower bowel.

The above is about all that can be said in favor of conservative surgery on cancers of the rectum. And it is evident that before conservative surgery can be undertaken in any given case, a fairly accurate knowledge of the location and area involved should be determined.

SLOW COURSE OF CANCER OF THE RECTUM

There is one other feature, however, to which attention should be called and that is the very slow course which some cancers of the rectum seem to pursue. Such a case is illustrated in Case 1 of my series.

This patient had had stomach trouble, constipation, and generally poor health for many years. She had had ribbon stools and difficulty in defecation for 1 year. It is reasonably certain, therefore, that her cancer started at least 1 year prior to the date of her operation, or about January 1, 1903. She was operated upon by Dr. Bolton, at the New York Hospital, February 8, 1904, at which time he made a posterior approach, resected the rectum containing an adenocarcinoma, did an end-to-end suture, and established a temporary left inguinal colostomy. "This specimen was the lower 8 centimeters of the rectum. A moderately indurated ulcer involved all except $1\frac{1}{2}$ centimeters at either end. The mucosa below the ulcer was normal, but that above was indurated, at one point right up to the line of excision. The lumen was reduced moderately more in the upper than in the middle and lower parts. Sections showed a typical adenocarcinoma with slight mucoid degeneration. The ulcerated area showed invasion of the muscular coat. At one point the mucosa was involved close to the upper incision."

This patient was referred to me on her return from New York, May 30, 1904, at which time, there was a marked stricture in the rectum about 3 inches from the anus. She has been closely under my observation ever since.

In December, 1906, the patient became pregnant and in the following spring I noticed, first, a softening and reduplication of the scar, and later a definite

mass which could be none other than a recurrence of the tumor removed 2 years previously. After consultation, it was decided to let the pregnancy continue and in October, 1907, she was delivered normally of a boy who is living today. The tumor at this time was about the size of a hen's egg. Operation was advised and urged immediately thereafter, but she could not be induced to go through it until February, 1913, over 5 years after the birth of her child. In the meantime, the growth had infiltrated the floor of the vagina and the sacrum. In April, 1912, O. C. Smith saw the patient in consultation with me and considered the involvement so extensive as to be inoperable. But in February, 1913, 10 years after the original symptoms, 9 years after the original operation, and 6 years after the recurrence of the growth and the birth of her child, she went to New York and was operated on by William Seaman Bainbridge. He removed the entire rectum and anus, the coccyx and all of the soft tissues in the pelvis back of the vagina making an entirely new perineum. This

pause. Pain began in the region of the sacrum and in August, 1910, she became more or less bedridden from pain. A suspicion of return was of course immediately entertained but it could not be demonstrated with certainty until December. Dr. Bainbridge came to Hartford and again tried to stay the growth. The patient died December 22, 1910, at least 17 years from the time the growth started.

This case in particular has certainly served to impress on me the very slow rate at which this disease may grow and metastasize. There was never any reason to think that this patient had any metastasis beyond the immediate growth, and this can be asserted very positively because at the laparotomy last December, we had an opportunity to study the lymphatics in the rectoperitoneum as well as in the liver.

I have seen a number of other cases, however, where the course of this disease seemed to be quite as rapid as is the case in malignant disease elsewhere. I have opened the abdomen several times in patients where symptoms did not go back very many weeks and found the retroperitoneal lymphatics thoroughly invaded.

SYMPTOMS

I have studied the early symptoms in the 53 cases of my series, with the following results:



Fig. 13 Case 5 The anteroposterior view of Figure 12 The letter indications are the same

below the surface, also firmly encapsulated. Removal of the bodies was accomplished with only slight

the cavities.

Recovery was prompt. There was no growth in the cultures during 96 hours. The drains were removed on the fourth day. The headaches were improved but were still more or less troublesome. There was slight improvement in the left hemiplegia, due in large part, no doubt, to physiotherapy.



Fig. 14. Case 6. *a*, Large defect of the skull in the left frontal region. *b*, Jacket of the rifle bullet. *c*, The distal portion of steel core of rifle bullet which after removal fitted nearly into the jacket. *d*, Proximal portion of steel core. The small metallic foreign body shadows were practically all extracranial and unimportant.



Fig. 15. Case 6. Anteroposterior picture of Figure 14. The letter indications are the same. Note the depth of *d*.

CASE 8 Sgt. D. F. Gunshot wound of left occipital region; abscess of left occipital lobe, metallic foreign body in left cerebral peduncle; operation; drainage of abscess; death due to septicæmia.

The patient was wounded July 4, 1918. There was immediate, complete right hemiplegia. The patient did not lose consciousness. He was taken prisoner by the Germans, and while in a German hospital a piece of shrapnel was removed from the left occipital lobe. The arm and leg gradually improved and in November, 1918, the patient began to walk.

He was admitted to U. S. General Hospital No. 2, Fort McHenry, Maryland, March 24, 1919. There was spasticity of the right upper and lower ex-

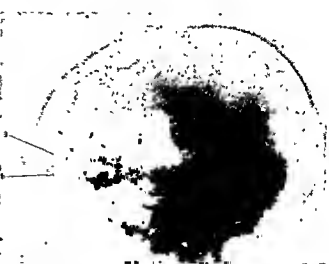


Fig. 16. Case 6 *a*, Proximal portion of steel core of bullet. *b*, Silver clips placed as markers on rubber tissue drain. Note the absence of large skull fragments seen in Figures 14 and 15

This patient, Case 15 of my series, had been operated upon for piles in Russia about 1897 and again in Brazil 10 years later. She had had condylomata of the buttocks and rectum for many months and had been treated by various doctors here in the city. On October 25, 1910, she was referred to me by Dr. Standish, who suspected cancer of the rectum. She went to the hospital and I examined her under either with the intention of obtaining a specimen for examination. To my surprise, I found it impossible to get even a finger into the rectum. The anus was a tight ring like shoe leather and appeared to be the same further up.

terior to the uterus. These masses are hard and nodular and undoubtedly represent an inoperable cancer. Simple colostomy done through middle of left rectus. About one-fourth rotation given to the proximal end. The patient was discharged a few weeks later in good condition.

Two years later, I saw this patient. She had gained 42 pounds in weight, and had one or two movements of the bowels a day with full control. But she had come to me again because she had begun to lose weight and suffer pain in the back and legs. She also complained that a certain amount of discharge had recently occurred from the rectum. In December, 1913, I saw this patient again with H. F. Stoll. I could not understand why the patient had not died and my mind was giving all the credit for the stay of the disease to the colostomy. But in view of the unexpected result, our minds naturally turned to the possibility that the whole disease might have been due to syphilis. The fact that she had had syphilis and had had syphilis of the rectum was not disputed. I turned her over to Dr. Stoll, therefore, in December, 1913, and he treated her for syphilis then and at intervals since. This patient has been in the Hartford Hospital for various reasons and at various times but each time the diagnosis has been cancer of the rectum.

In May, 1915, my physical examination shows her as "emaciated." The rectal examination at this time was still as before described. In another history at the hospital a few months later, she is described as having "oedema of the feet." My notes show that she not only occasionally visited the Hartford Hospital about this time but other hospitals, including Mt. Sinai. At any rate, she was frequently receiving antisyphilitic treatment from Dr. Stoll, more especially about 1915, and the latter part of that year she began to feel better. Her pain disappeared, she grew stronger, and began to gain in weight again.

For several years now, this woman has been in excellent health. And to bring the case up to date with a fitting climax, we now learn that she was again married about 4 months ago.

Two questions present themselves regarding this case. First, did this woman ever have a cancer? Second, did syphilis cause the cancer or did syphilis cure the cancer? The rectum is still obstructed by a stony, hard mass. It will scarcely admit a slate pencil.

One conclusion I think may be drawn from this case. If the rectal obstruction really represents the scar tissue of syphilis, the salvarsan may have cured the syphilis, but at least it had no effect on the scar tissue. Why cannot we apply this result to the problem of parasymphilitic conditions in the nervous system and conclude on the basis of this case that we may cure syphilitic infection of the brain and cord, but let us bear in mind, that we cannot remove the scar tissue, which, after all, is the real pathology of these conditions.

Because of the case just described, I was extremely interested in a specimen of rectum removed by Dr. Hepburn at the hospital very recently. This specimen was simply a thick leathery tube. The walls of it were one-third or one-half an inch in thickness. It did not suggest cancer at all but appeared as a circular tube composed mostly of fibrous tissue. Its caliber was very small. There was no ulcerating surface and nothing to suggest a tumor. Dr. Hepburn and I both felt sure that the specimen represented an old, diffuse syphilitic stricture but the report from the laboratory was scirrhus carcinoma.

The sections show "a deep invasion of the connective and muscular tissues by small cuboidal epithelial cells following the lymphatics. They are massed in small acini or found in long rows. The nuclei are small and pyknotic but mitoses are few. Only occasionally do these cells form gland tubules." There was no suggestion of ulceration of the rectal surface anywhere. Does a specimen like this represent a cancer of the rectum in process of cure by gradual fibrosis and did the case previously mentioned represent a case in which fibrosis actually went through to a cure in the 10 years under which we have watched her? I do not think such a view entirely unreasonable. We know that well authenticated cases of cancer in other parts of the

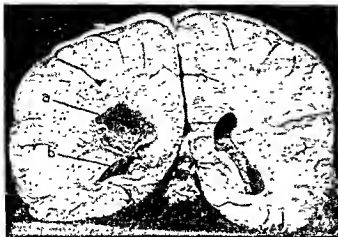


Fig. 21. Case 8. View of the posterior surface of a transverse section of the brain, showing the abscess at *a*, in close proximity to the ventricle, *b*.

Forty-eight hours after operation the cultures showed a growth of *streptococcus hæmolyticus*; headaches gradually increased and for several days there was stupor with slowing of the pulse and choked discs.

Operation, June 22, 1919, drainage of abscess of left occipital lobe. A small opening was made anterior to the defect. An exploring needle was introduced into the occipital lobe and about 30 cubic centimeters of greenish pus evacuated. Rubber tissue drains were placed in the cavity.

Twenty-four hours after operation, there was a sharp rise of temperature to 105° and increased pulse rate of 180. Within a few hours there was a rapid decline of temperature. The following day there was another sharp rise of temperature while the pulse rate remained rapid. The patient did not present the appearance of one suffering with



Fig. 22. Case 8. Anterior view of a transverse section of the brain some distance in front of Figure 21, showing the metallic foreign body in the left cerebral peduncle. Note the absence of softening or other evidence of irritation.

meningitis, nor were the symptoms of increased intracranial pressure prominent, the clinical picture resembled septicæmia. Death occurred on June 25, 1919.

The autopsy revealed a large abscess in the left occipital lobe communicating with the ventricle and a metallic foreign body firmly encapsulated in the left cerebral peduncle entirely removed from the abscess cavity (Figs. 21 and 22). The endocardium was the seat of recent inflammatory changes, and

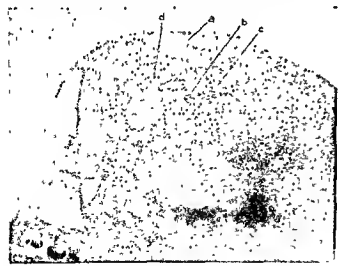


Fig. 23. Case 9. *a*, Skull defect at site of gunshot wound. *b* and *c*, Shell fragments deep in the cerebral tissue. *d*, Bone fragment shadow deep in the cerebral tissue.



Fig. 24. Case 9. Anteroposterior view of Figure 23. The letter indications are the same.

RENAL HÆMATURIA AS A SYMPTOM OF A PRENEPHRITIC CONDITION OF THE KIDNEYS

By EDWARD L. YOUNG, JR., M.D., BOSTON

SINCE 1910, approximately thirteen hundred cases have been treated in the house service of the Genito-Urinary Department at the Massachusetts General Hospital. Of this number about 40 per cent had hæmaturia at some time in the history of the disease, and by this I mean gross bleeding sufficient to attract the attention of the patient. This was not a prominent symptom in every case when seen by the attending surgeon, but active at some time in the disease. In many cases it was the presenting symptom, but in all but 21, the underlying cause was positively diagnosed on study. In addition to this number I am including 5 cases from the general surgical service which occurred during the same time and were carefully studied, and 7 cases in private practice where the data were sufficiently complete to make them of value. In actual number, or even when compared with the total number seen, this collection of cases does not seem very large, but when we consider them from the point of view of the possibilities of trouble to the individual, or as the first symptom of a condition which in certain cases may be remedied if taken in time, they seem of greater importance.

First let us consider some of the statistics shown in this list of 33 cases. The division by sex is decidedly unequal, only 8 of the cases being females. The division into decades is as follows:

	Cases
Below 20	4
20 to 30	8
30 to 40	7
40 to 50	10
50 to 60	2
Over 60	2

This symptom plays no favorites as regards age.

The duration varied from a few hours to 9 years, the case with the short history coming

in with severe renal colic apparently due to the passage of blood-clot. The case lasting 9 years was intermittent and not accompanied by pain. Two cases had suffered for 6 years, one intermittently and one constantly, neither being accompanied by colic. The remaining cases varied from a few days in 4 cases to from 4 to 12 months in 4 cases. These were about equally divided between cases in which the bleeding was constant and cases where it was intermittent.

Pain accompanied the condition in 20 out of the 33 cases, and the variation in amount and character was very great. In the case mentioned above, the patient was brought in writhing in agony, due, as we believed, to the clotting of blood in the renal pelvis and the blocking of the ureter; this pain was the first symptom in two attacks in which he was brought to the emergency ward and was followed by bleeding, once, an hour after the onset of the pain and once, about fifteen minutes. The last attack was less severe than the first, and in both, relief followed the passage of considerable bright red, partly clotted blood. In a few of the other cases the pain resembled renal colic, but in most it was a more indefinite condition and although it was on the side from which blood was coming, it was variously referred to the back, the flank, or the abdomen. In many it was not absolutely connected with the bleeding, as there might be attacks of bleeding without pain, or *vice versa*. In one case an innocent appendix had been sacrificed without any effect on the pain, which up to that time had been the only symptom. Later bleeding directed attention toward the urinary tract.

Culture of the urine was not mentioned in every case, but only once was there any evidence of infection. The urinary examination was not remarkable in any case. Only once is there mention made of more leucocytes than was consistent with the amount of blood and that case was sterile to culture.

This case should perhaps have been classified with the inflammatory cases, of which we hope to write later, since there was no attempt made to remove the metal. It is included, however, with this group since it so well illustrates the relative seriousness of bony and metallic foreign bodies in the brain. The postoperative course was certainly unusual in that the symptoms suddenly changed from those of increased intracranial pressure, with subnormal temperature and pulse-rate to high temperature and very rapid pulse. The condition was not well understood until the autopsy, when blood cultures from various organs, including the heart, gave streptococcus growth.

CASE 9. Pvt. R. H. S. Gunshot wound in left frontal region; metallic foreign body deep in the left frontal lobe; no symptoms; no operation; recovery

The patient was injured November 9, 1918, by a bursting shell. Several pieces of metal and bone were removed at one of the forward hospitals

When he was examined at U. S. General Hospital No. 2, Fort McHenry, Maryland, there were no neurological symptoms, and the general condition of the patient was good. Roentgenograms revealed a bony defect in the left frontal region and two metallic foreign bodies (Figs 23 and 24). The defect in the left frontal region was the seat of marked pulsations, which caused the patient to desire that the foreign bodies be removed and the skull repaired.

Because of the absence of serious symptoms and the fact that the bodies were not large, but deeply placed in the brain substance, their removal was not attempted. The patient was discharged from the army, with instructions to report later

CASE 10. Civilian J. L. Pistol bullet in left hemisphere 10 years; no symptoms, no operation.

In 1909 the patient was injured by a thirty-two caliber pistol bullet. Immediately following the injury there was only slight neurological disturbance and it was decided not to remove the missile. Since the injury the patient has suffered no ill effects, but presented himself for examination with the intention of leaving the bullet undisturbed if it were advisable. A roentgenogram revealed a small skull defect (Fig. 25) and the bullet shadow (Figs. 25 and 26). This case again illustrates the fact that metallic foreign bodies in the absence of infection are well tolerated in the brain tissue

The postoperative roentgen-rays have not been included, but the foreign bodies removed may be seen in Figure 27.

The end-results of the cases may be summed up as follows:

Case 1 — complete recovery;

Case 2 — complete recovery with the exception of dim vision of the right eye, due to direct injury at the time of the accident;

Case 3 — persistence of headache, which has made it necessary to defer repairing the skull defect;

Case 4 — complete recovery,

Case 5 — complete recovery, with repair of the skull defect;

Case 6 — death, the result of infection due to the disturbance of dormant organisms in the scar tissue surrounding a cyst in the frontal lobe, which communicated with the ventricle;

Case 7 — recovery, with marked degree of hemiplegia of the opposite side, which is gradually improving;

Case 8 — death, the result of streptococcus hemolyticus septicæmia, which was due to the stirring up of dormant organisms in the left occipital lobe;

Case 9 — no operation, because of the inaccessibility of the metal and the absence of symptoms, discharge from the army in good condition;

Case 10 — no operation, since there were no symptoms after a period of ten years.

This report has been made possible through the cooperation of the various departments of the U. S. General Hospital No. 2, Fort McHenry, Maryland, and through the personal assistance of Lieutenant-Colonel T. J. Leary, the chief of the surgical service, Major J. F. Lutz, in charge of the roentgen-ray department, and Lieutenant M. J. Egan, assistant in the neurosurgical service

pression of kidney function on the damaged side and a hypernephroma was strongly suspected; one of these turned out to be a horseshoe kidney. From 4 of these cases, specimens were removed for laboratory examination—the whole kidney in 3 cases and a piece of the cortex in 1. One showed an angioma of a papilla; one kidney which bled so profusely as to threaten life showed on careful examination by Dr Wright nothing but congestion. His suggestion was an infection by a hæmolytic streptococcus, but as no such organism was shown in the urine before, or in the kidney after, operation this does not seem likely. The piece of cortex removed at decapsulation showed nothing. One kidney removed as a tuberculous kidney showed on examination the following: "Cortex normal, markings distinct. Pelvis normal, no ulceration in calyces; a few pinhead-sized, yellow, opaque spots surrounded by a purplish zone. Small focal collections of small round cells with fibrosis and desquamation of the glomeruli. Diagnosis: Chronic infectious nephritis." As neither the urine before operation nor stained specimens of these areas afterward showed any organisms, the infection was certainly not present when the patient was being studied, and as he bled twice after leaving the hospital before quieting down, the process was either bilateral or else was not the cause of the bleeding in the first place. Moreover, as it was not tuberculous and contained no other organisms, it would certainly have taken care of itself provided there was no other primary focus in the body to supply fuel to the flames.

Of these 33 cases, operation showed a definite pathological cause to account for bleeding in 3 cases: two horseshoe kidneys and one movable kidney. Beside these there are 2 cases where trauma was the probable cause, and one where the patient is known to have passed a stone from the urinary tract, and it seemed likely that the present attack was also due to a small stone. There is 1 case of cavernous angioma proved by pathological examination. This leaves 26 cases in which we are entirely at a loss to assign a cause or else have to consider some form of nephritis.

Keyes gives the causes to which renal hæmaturia may be due, outside of the common diagnosis, as follows:

1. Hæmophilia, scurvy, purpura;
2. Drug-poisoning (turpentine, cantharides, etc.);
3. Parasites (e.g., distoma hæmatobium);
4. Acute or chronic febrile diseases (scarlet fever, malaria);
5. Surgical diseases (hydronephrosis, renal mobility);
6. The passage of crystals;
7. Angioneurosis;
8. Chronic nephritis,
9. Papillitis.

Most of these conditions should lend themselves readily to diagnosis. The last two, however, may be very difficult to recognize, and we must add to this list the bleeding coming from a kidney which, even in the hands

life is in danger if the kidney be not removed. I want to add to the list of possible causes one which, so far as I know, has never before been discussed, namely prenephritic congestion of the kidneys.

Up to about 1900, it was believed that chronic nephritis could not be the cause of renal hæmaturia without giving signs of its presence; but during the next few years several nephrectomies were done for bleeding, and a study of the kidneys afterward showed the presence of chronic nephritis. Since that time so much work has been done along this line that the possibility of nephritis as a cause of such bleeding is now very definitely recognized.

I believe that no one will question the following statements: That unilateral hæmaturia can be due to a bilateral nephritis, and that a nephritis can cause colic as well as bleeding. It is also stated that nephritis can be unilateral. Within the last few years, however, the work done in regard to the various nephritides has progressed to such an extent that it is again doubted whether a nephritis can be present without giving some evidence of its presence by some one or more of the different laboratory tests.

assistant He not only secured excellent results in his 2 cases, but also showed the value of levers placed under the neck to lift the head back into its socket.

The only complete paper on this subject hitherto published in the English language was contributed to the *Annals of Surgery*, in 1894, by M. L. Harris, of Chicago. His operation was a success, and his paper is now a classic.

It has been possible for the author to secure from the literature 48 cases, which, with Dr. Gaub's and his own make up the 50 cases which are briefly reported below.

Analysis of these cases will show that, while open reduction in old hip luxations is usually difficult and not altogether devoid of danger, it is the operation of choice. In a very large proportion of cases, it greatly improves the use of the limb and, in very many, restores its complete function. Where reduction is impossible, resection of the head may still be done to secure improved position of the limb. This operation, however, has a higher mortality and is followed by less perfect use.

ANALYSIS OF 50 CASES REPORTED

If assorted into decades, it will be found that 3 open reductions were made in the eighties, 21 in the nineties, 20 in the first decade of the present century, and only 6 reported in the last ten years. The reason for the small number of cases reported in recent years is probably the general use of the X-ray, which has rendered this diagnosis easy even to those not skilled in surgery.

By countries, it may be said that 13 of these patients were operated upon in the United States, 6 in France, 6 in Great Britain, 3 in Italy, 1 in Switzerland, 14 in Germany and 7 in Austria.

Sex and age There were 41 males, 8 females, and in 1 case the sex was not stated.

There were:

	Cases
In first decade of life	12
In second decade of life ..	12
In third decade of life	6
In fourth decade of life	9
In fifth decade of life	6
Above the 50th year	3
"Adult"	1
Not stated	1
Total ..	50

This incidence of sex and age is not markedly different from that which obtains in large collections of recent dislocations. The chief difference is in the greater number of cases in little children whose dislocations if neglected are more amenable to reduction than those of adults and whose operations are less likely to terminate in resection of the head.

DURATION OF DISLOCATION

	Cases
1 to 2 months	13
2 to 3 months	12
3 to 4 months	5
4 to 5 months	7
5 to 6 months	1
6 months to 1 year	8
1 to 4 years	3
16 years	1
Total	50

EARLY TRIALS AT REDUCTION

	Cases
Fruitless efforts immediately after dislocation	11
No early trials made	17
No record of early trials	17
Trials made within first 4 weeks	4
Previously reduced by operation	1
Total	50

FORM OF DISLOCATION

	Cases
Dorsal	34
Obturator	10
Scalic	3
Upward	2
Not stated	1
Total	50

PATHOLOGICAL CONDITION PRESENT

	Cases
Acetabulum said to have been filled with	38
	1
	11
	12
ken in	3
Fracture of cup of acetabulum reported in	3
Fracture of pelvis in	2
Head pushed through obturator membrane	
in	1
Epiphyseal separation in	1

OPERATIVE TECHNIQUE

Incision In 32 cases in which the location of the incision was definitely stated, there were done by

	Cases
Langenbeck's straight incision	11
Barker's anterior incision	8
Kocher's angular incision	7
White's posterior incision	2
Combined anterior and posterior incision	3
Goblet incision	1

purely arteriosclerotic type) is seriously considered other than the absorption of toxin from some focus in the body. The mere physical presence of one or more bacteria in the kidney does not cause nephritis. It is the poison they produce that does the damage, and that poison can do the damage with equal ease, provided it reaches the kidney, regardless of whether the organisms are located in the tonsil or in the kidney. Moreover, when a group of such bacteria does locate in the kidney and does increase, an abscess may then result, and we are dealing with a surgical condition primarily. If such a localized area of infection is so small that only bacteria and no pus show in the urine, we cannot tell the site of the infection, because it has been proved without possibility of doubt that the kidney does excrete bacteria. Accordingly the mere presence of staphylococci in the urine cannot permit us to say that there is an "infectious" nephritis. That infection may be situated in the tonsil and the kidney simply excrete the germ, and if in the urine there is pus as well as bacteria, then the condition has been carried out of the class of nephritis and comes distinctly into the class of surgical kidneys, and by surgical I do not necessarily mean operative, since we have all seen cases of low-grade hæmatogenous infections of the kidney which clear up without difficulty. The recognition of organisms from the kidney should always demand the consideration of a primary focus in addition to the study of the kidney; so that to differentiate between toxic and infectious nephritis would seem to be a purely academic discussion unnecessary from the practical point of view, since operation is never necessary in either class of case except to stop otherwise uncontrollable hæmorrhage.

E. G. Crabtree, who has done more work in kidney infections than any other investigator in this country, emphasizes two things as necessary for the better understanding of these conditions: first, that the kidney must be recognized as both a secretory and an excretory organ, and that all classes of bacteria may pass through without lodging and doing permanent damage; second, that when bacteria do lodge in the kidney the type of reaction depends on the virulence of the bacteria,

the relatively harmless colon bacillus passing through the glomeruli and tubules and only sticking when it reaches the pelvis, while the very virulent streptococci start at once to damage the glomeruli, and the staphylococci (which are of intermediate virulence) form military abscesses in the cortex of the kidney, but after they have left the glomeruli.

I believe this is the real answer to Rovsing's statement that he has cultivated pus-producing organisms from the urine, and later has found lesions in the kidney microscopically which he could not differentiate from chronic nephritis. He was, in fact, dealing with a case of chronic nephritis and happened to catch some bacteria which had been excreted by the kidney, perhaps coming from the focus which was the primary cause of the damage, and if so, in operating on the kidney he was treating what was in reality a non-surgical condition.

I have gone into this detail as I think it is necessary to get as clear an understanding as possible of the relation of infection in order to treat these cases intelligently. I will illustrate this argument by a few cases.

and the bleeding came on just as that was beginning to quiet down. The catheter was removed and the blood ureter showed bladder catheterized, as only the single catheterizing instrument could be used and the child was too sensitive to spend much time. It was impossible to state

second visit a few days later the bleeding had entirely stopped, but a few staphylococci were still

trates a late stage of the damage due to the strep-

most that could be gained was one-half inch additional length. Operation was decided on, and preparation for efficient traction and manipulation at time of operation was made 3 days before the time set.

This consisted in the application of a strip of adhesive plaster of triple thickness applied to each side of the thigh, each strip having fixed in its lower end a harness ring as shown in the drawing.

Operation was performed on April 19, 1919. A Kocher incision was used. Towels were fixed to the wound edges to protect from skin infection. The incision was deepened until the margin of the acetabulum could be exposed. This cavity was roofed over and filled with dense connective tissue and shreds of capsule.

All this tissue was dissected out with strong scissors, exposing the normal cartilage. The fibrous tissue was then lifted and cleared from the anterior aspect of the great trochanter and neck until the cartilaginous margin of the head was reached. The pelvis was firmly fixed to the table by a band of webbing passing over it, the lower leaf of the table was dropped permitting the patient's right knee to be flexed and the leg to hang.

The webbing surcingle was then adjusted to the assistant, H. G. Kuehner, passing over his left shoulder, diagonally across his back and under his right axilla, each end being furnished with a harness snap which snapped into its corresponding harness ring above the patient's knee. The surcingle had by previous trial been adjusted to the proper length. Dr. Kuehner then passed his right forearm under the patient's left flexed knee and, by standing on a low stool with his right foot and placing his left knee against the table, was able to exert the most powerful traction, using both his arm as a hook and the weight of his body as a tractive force. He was



Fig. 1. Reduction by body traction

Toward the close of the operation the patient's pulse became weak and rapid, due probably to shock from the forcible manipulations and loss of blood caused by the dissection of the bone from its bed. The hemorrhage was not great and was entirely from small vessels. Later in the day he had quite an active oozing which required removal of stitches and packing of the cavity with gauze. The effect of this loss of blood was very marked and passed off only after administration of salt solution by hypodermoclysis.

The limb was fixed in abduction to a long splint with slight traction and the pelvis kept from tilting by applying a Buck's extension to the other limb in strong abduction.

After operation foot-drop was noticed which persisted for several months, but finally disappeared. It was thought to have been caused by pressure on the sciatic nerve by the levers or more likely by traction on the external popliteal at the bend of the knee.

A tendency to eversion of the limb persisted, due to loss of the internal branch of the Y ligament. The pit, which had been packed with iodoform gauze, rapidly filled with healthy granulations and healing proceeded in an orderly manner.

ments of the operator

So firmly were the head and neck entrenched in their bed of connective tissue that they could not be delivered until this tissue was cut away by the use of curved scissors passed behind the bone. Four levers were then passed under the neck, and, by their use together with the efficient manipulation and traction of Dr. Kuehner, the head was delivered to the margin of the acetabulum and then into its cavity.

The return of the head to its socket was marked by the characteristic click which indicates the reduction of hip luxation. This click could be heard across the room. After the head was in place, there seemed to be no disposition for it to leave the socket. The external branch of the Y ligament remained intact, but the internal branch had been separated.

The cavity left by replacement of the head was drained with a cigarette drain and rubber tube, and the remainder of the incision closed with buried sutures of catgut and superficial ones of silk.

prerenephritic congestion as a cause, since we certainly do not know how many assaults from a primary focus are necessary before a nephritis becomes self-continued, or what are the conditions under which the prerenephritis becomes in fact a progressive destructive disease.

In one of the most important contributions to medical literature made in a long time, *The Future of Medicine*, Sir James Mackenzie elaborates the argument which runs in brief as follows. That the aim of medicine should be the prevention of disease, that the progress of medicine to the present time actually has been from the other end, the first accurate knowledge coming from the disease after it had killed its host, and the study being made in the autopsy room and the laboratory. From that came the development of the means of recognition of disease after it had done its damage, and the great need now is the development of the means of recognition of pre-existing conditions where disease has

about for some time, and the treatment of those lesions known to be the occasional forerunners of cancer holds a recognized place in therapeutics. I believe that hæmaturia may be a symptom of sufficient importance to attract attention, due to a stage in kidney disease where the damage is very slight, and where a cure and restoration of the renal tissue to normal may confidently be expected if the primary site of trouble can be recognized and eliminated.

I realize that I have not proved my point as well as I wish, and even if I had, that the number of cases of hæmaturia from a prerenephritic condition in comparison with all the

cases of nephritis is so small as to result in very little actual progress in curing the disease; but what I hope is that the recognition of this possibility may be another step toward the goal of preventive medicine.

CONCLUSIONS

- 1 The cause of renal hæmaturia can be demonstrated in all but a very small proportion of cases.

- 2 Kidney bleeding of unknown origin has been known to be enough to threaten life and require nephrectomy.

- 3 A horseshoe kidney, a slightly movable kidney, a varix of a renal papilla may occasionally exist without the possibility of positive pre-operative diagnosis.

4. In a few instances the split function may show considerable damage on the bleeding side and the pyelogram a considerable deviation from the normal, a combination which should require exploration, but these cases are very rare and operation as a routine exploratory procedure in cases of hæmaturia of unknown origin is unwise, as there is no assurance that it will have any effect on the progress of the bleeding.

5. In a fair number of these cases a later nephritis has been proved to be the cause of trouble.

6. It is reasonable to believe that in a majority of these cases there is an early unrecognized nephritis or a prerenephritic condition which can be, and probably often is, the cause of hæmaturia, and that this condition may or may not go on to a progressive damage of the kidney, depending on conditions which we do not as yet understand. In certain of these cases the primary focus of damage can be recognized, and when eliminated will prevent the later development of the disease.

hip, caused from being buried under a fall of coal. Un-
the acetabulum was empty. A vertical incision was made
over the trochanter, the trochanter freed of its muscles,
and the head easily pried into place with a lever. The

present, cartilages intact on head but lost in acetabulum.
Through a Langenbeck incision, the acetabulum was
excavated; the head and trochanter freed. Replacement
was accomplished without much difficulty. The patient
recovered. Extension in abduction was applied, later
inversion with adhesive plaster. Primary union resulted
but there was a tendency to relaxation. The patient re-
full return

by Arpad
Gerster, New York; reported in Ann. Surg., 1893, xvii,
286. Male, age 8, 2 weeks ago was struck on the

weeks ago the patient was caught in a wagon wheel, pro-
ducing a dorsal dislocation of the hip. No efforts were made
to reduce the dislocation. The cartilages were intact.
Through a Langenbeck incision the trochanter was freed,
the dislocation reduced, and the wound closed without
sutures or drain. The patient recovered. Extension was
applied. There was motion in narcosis in 4½ months. Two
years later, the patient showed an ideal result with all
movements.

CASE 5. June, 1890. Operated upon by Charles T.
Parkes, Chicago, N. Am. Pract., Chicago, 1890, ii, 499.
Male, age 30. Five months ago the patient was struck on
the hip by a sack of wheat which had fallen 12 feet, pro-
ducing a sciatic dislocation. Immediate attempts at

anterior tibial group of muscles, and 1½ inch shortening
of the limb. The head was covered with granulations
and the acetabulum was almost filled with them. A five-
inch incision was made with center at great trochanter.
Section of part of Y ligament. The head was easily re-
placed by manipulation. The patient recovered. Extension
with abduction was applied; no brace was used after the
patient left his bed. Convalescence was smooth, the
patient was out of bed in 3 weeks, and left the hospital in
2 months, walking with a cane, but with paralysis of
after leav-

ward. The neck and trochanter were freed. Reduction
was accomplished with difficulty. The patient recovered
from operation. Extension was applied for 10 weeks. The
patient walked with crutches in 14 weeks. Although the
patient was much shocked from operation and suffered a

P. Gibney,
621 Male,
age 8, 7 months ago was run over by an express wagon and
suffered a dorsal dislocation of the hip. Seven weeks after
injury reduction was attempted through open incision. The
dislocation recurred and the patient suffered from paralysis
and shortening. The acetabulum was filled with fibrous
tissue. An incision was made through the scar of former
operation and the acetabulum was curetted with sharp
scissors. The adductor was divided and the head and neck

ceived 3 years ago as the result of a fall, striking the hip.
No attempts had been made to reduce the dislocation.
Examination before operation showed atrophy and 7
centimeters shortening of the limb. The acetabulum was
full of fibrous tissue. An incision made over the trochanter,
tenotomy of adductor muscles. The patient recovered, an
extension bandage was applied, there was no suppurative
There was still a shortening of 4 centimeters, the move-
ments were more extensive than before, but limited.

CASE 7. Operated upon by Kirmisson, reported in
Soc. de chir., 1892, Mar. Male, age 19, had a dorsal
dislocation of 4 years' standing. Before operation there was
a shortening of 6 centimeters. Through a lateral incision,
part of the head was removed, the rest replaced. The
patient recovered. There was some suppurative. After
operation there was still 6 centimeters shortening, position
was improved, mobility was sufficient. The patient walks
easily with an elevated sole.

CASE 8. September, 1892. Operated upon by Kuester,
Male, age 20, 2 weeks ago was struck on the hip by a

in place, although foot-drop persisted and the hip was
quite stiff.

CASE 11. 1894. Operated upon by W. G. Spencer,
London, reported in Tr. Clin. Soc., Lond., 1895, xviii,
293. Male, age 7, 5 months ago fell from a roller which
passed over the legs, producing a dorsal dislocation. Imme-
diate efforts were made to reduce the dislocation which
were thought to be successful. The patient was very
lame. The acetabulum was found to be filled with dense
fibrous tissue. Through a straight anterior incision the
acetabulum was cleared out. The patient recovered. The
limb was fixed in a plaster splint in position of abduction
and external rotation. Following operation there was
fibrous rigidity with slight abduction and rotation but the
prognosis was good.

CASE 12. February 11, 1894. Operated upon by M. L.
Harris, Chicago; reported in Ann. Surg., 1894, xx, 319.
Male, age 33, 4 months ago was struck on hip by a 350-
pound pulley, and suffered a dorsal dislocation. Three
attempts at 4, 5, and 7 weeks after the accident were
made to reduce the dislocation. Before operation, the
limb was atrophied and useless. Examination showed the
acetabulum filled with tough connective tissue and capsu-
le, the cartilage smooth, the head on the posterior super-
ior edge of the acetabulum, and a small piece broken from
the rim of the acetabulum. An incision was made be-
tween the tensor vaginae femoris and the gluteus medius.
All muscles attached to the great trochanter and shaft as
far as the lesser trochanter were severed subperiosteally.

tion there was 5 centimeters shortening and the patient
walked with difficulty, with crutches. Examination showed
the head bound down, the acetabulum full, round ligament

for an acute inflammatory process. While examining the mass further, with reference to the advisability of resection, fluctuation was detected. A one-inch vertical incision was made through the anterior longitudinal muscle band, and much foul pus escaped, upon which the mass for the most part collapsed. It was then determined that the pus collection had been between the circular muscle layer and the submucosa, and although the abscess was so large as to have dissected practically the entire circumference of the cæcum, there was no evidence of either gangrene or perforation. A cigarette drain was inserted into the abscess cavity and stitched to the margin of the incision which had extended through the serous and muscle coats. The cæcum was then replaced after careful cleansing, and the abdominal incision closed.

The postoperative course was entirely regular. No evidence of fecal fistula ever developed, the drain was removed in one week, and three weeks after operation the patient was evacuated as an ambulant case to the United States.

We are unable to explain satisfactorily the origin and development of this dissecting abscess between the layers of the cecal wall. Jackson (2) and Moschcowitz (3) have reported diverticulitis of the cæcum, but in this case there was no evidence of a diverticulum or of any connection between the abscess cavity and the lumen of the cæcum. In-

fective organisms are always present in the cæcum, and according to Piersol (4) the submucous layer of the cæcum, like that of the appendix, is rich in lymphoid tissue, which is readily subject to infection. But these factors are present in all human beings, and if contributory causes, then infections and abscesses of the cecal wall should be seen frequently rather than rarely.

Aside from the unusual character of the lesion in this case, it is remarkable that there should have been no adhesions or gangrene, and that the pus should have remained localized between the layers of the cecal wall. Early operation probably accounted for this state of affairs. It is interesting to speculate whether perforation would have occurred into the lumen of the cæcum or into the free peritoneal cavity if operation had been delayed.

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CASE 23. January 15, 1898. Operated upon by H. M. Sherman, San Francisco. Reported in Brit. M. J., 1898, ii, this ago and ts to reduce weeks later. es herself in

trochanter, the acetabulum was cleared, and reduction easily accomplished. A plaster-of-Paris spica with the patient recovered from ace, the splint was re- the twenty-sixth day. The child walked well and had free motion at 3 months.

CASE 24. 1890. Operated upon by Watson Cheyne, reported in Brit. M. J., 1899, ii, 1290. Male, age 60, fell 9 weeks ago, suffering dorsal dislocation of the hip. He was unable to stand alone before operation. Examination showed the acetabulum filled with soft tissue and fractured. The acetabulum was emptied, the patient recovered from operation and walked well in 2 months, without shortening.

CASE 25. 1899. Operated upon by Tietze, Breslau; reported in Jahrbuch d. schles. Gesellsch., 1899, p. 89. Male, age 36, 12 weeks ago was struck by a rolling log and knocked down, causing a dorsal dislocation. Eight days after injury efforts were made in vain to reduce the injury. Examination showed the acetabulum filled. Longitudinal and transverse incision made, acetabulum excavated, reduction accomplished by manipulation, the wound sutured. A plaster-of-Paris dressing was applied and kept on for 6 weeks, with the limb in adduction. The patient recovered from operation and followed an aseptic course. In 7 weeks he walked without support. Although motion was limited the leg was strong.

CASE 26. Operated upon by Payr; reported in Deutsche Ztschr. f. Chir., 1900, lvii. One month ago patient suffered dorsal dislocation of the hip with fracture of the acetabulum. Through a Kocher incision, reduction was accomplished. Two-thirds of the wound was sewed, one-third tamponed. The patient recovered from operation. The limb was placed in extension. He was dismissed in 5 months. Motion was satisfactory, gait easy, but there was a slight limp.

CASE 27. Operated upon by Ferrando, reported in Arch. di ortop., Milano, 1900. Male, age 10, 2½ years ago suffered a supracotyloid dislocation of the hip. Examination showed the acetabulum filled with dense connective tissue. Through an anterior longitudinal incision, the trochanter was freed, the acetabulum excavated, and the head modeled. The patient recovered from operation,

end of 6 weeks. Peroneal paralysis was present. Ten years later the peroneal paralysis persisted. The patient walked on the outer border of the foot and limped, and the hip was stiff.

CASE 29. April, 1901. Operated upon by Jacob, reported in Province méd., 15. hole in the road 3½ location of the hip.

Through a Langenbeck incision the acetabulum was excavated, the head freed, and reduction accomplished. A small part of the head was removed. A splint was applied. The patient recovered from operation, and the wound healed *per primam*. Three months later there was no shortening, motion was almost normal, and there was no limp.

CASE 30. June, 1901. Operated upon by Haedke, Schivelbein, Pomerania, reported in Deutsche Ztschr. f. Chir., 1902, lxi, 359. Male, age 14, 10 weeks ago suffered

weeks. The patient recovered from operation. The wound healed without suppuration and the patient was out of bed in 5½ weeks and had good motion. The result

fracture. The patient recovered from operation. There

CASE 32. January, 1902. Operated upon by Oberst, Halle, reported by Bruening, Deutsche Ztschr. f. Chir., 1904, lxi, 412. Male, age 10, 2½ weeks ago suffered a fall of slack. I converted from been made to

injury. Examination showed the trochanter porotic, the ligamentum teres thickened, the acetabulum filled with fibrous tissue. Through a Langenbeck incision, the periosteum and muscles were separated from the trochanter. The head, neck, and trochanter were freed. The head was easily restored. Tamponade and secondary suture 8 days later. The patient recovered from operation. Passive motion was begun in 2 weeks. Healing was

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anterior incision and partial incision of the Y ligament were made and the acetabulum cleared. A posterior incision was made and the head returned to position by pulley traction. Drainage with gypsum dressing applied. The patient recovered from operation. Although there was long continued suppuration, there was movement at the



Fig. 1. Cyst of the labium. Case 1. The cyst was 13.5 by 8.5 centimeters in diameter.

were encountered and in depth the cyst extended to the deep fascia of the pubic arch, tapering inward to almost a point, having the appearance of a pear with a slight neck or constriction, 5 centimeters from the tip.

Operation. Local anesthesia was employed in the dissection. Infiltration of the superficial tissues was made using 1% of 1 per cent cocaine hydrochlorate solution. Two elliptical lines of infiltration beginning at the upper pole of the tumor and extending to the lower pole were made, as it was necessary to remove a large area of the skin covering the tumor. Blunt dissection easily relieved the tumor mass from the surrounding tissue. Some difficulty was experienced in controlling hemorrhage as the base of the tumor was approached, as there were many tortuous large vessels close to the periosteum of the pelvic bone. Healing was rapid and uncomplicated and a fairly good labium was left.

FIBROMA OF THE LABIA

Fibrous growths of the labia while rather uncommon are next to the cyst in frequency of occurrence, and are the most frequent of the benign, solid neoplasms met with in this area of the female genitalia. These tumors may undergo a cystic degeneration if neglected, for as the process of growth advances, circulatory impairment results, the tumor becomes oedematous, semifluctuant to palpation, and undergoes a cystic degeneration as they do in the uterus. This tumor, like the retention cyst of Bartholin's gland, is subject to the influences of the menstrual period, they increase in size, cause pain, and

may become hamorrhagic. In the event of pregnancy, the tumor usually shows the same changes, but in addition may take on a very rapid growth. V. N. Leonard¹ reports 12 cases with an excellent digest of the literature and an exhaustive bibliography. The writer advises anyone interested in the subject of fibrous tumors of the vulva to study this report. Because of an accident to the fibrous tumor of this group after removal, it was impossible to secure photographs or pathological material for study, hence it will receive but passing mention with the case history.

This tumor was causing no physical or pathological symptoms and on removal proved macroscopically a simple fibroma. The exact tissue fostering this growth was not determined, but doubtless was from fibrous hyperplasia about the Bartholin gland.

Leonard says "Tumors of this region may attain greater dimensions than superficial fibromata in any other parts of the body." As a rule they grow rapidly and become pedunculated early. Many of them show some form of degenerative change. The subperitoneal fibromata, which originate in the pelvic connective tissue and grow along lines of least resistance, first appear at the vulva and are the largest tumors on record. The largest described weighed 268 pounds (Buckner, Whitney, and Harrington). Two-thirds of the fibroids of the vulva originate in the subcutaneous connective tissue, one-third in the extraperitoneal portion of the round ligament.

CASE 2. Female, white, age 30, married, nullipara. The patient was operated upon 7 years ago

and metritis, associated with a chronic profuse

neglected

The patient was experiencing her regular menstrual periods, which, however, became gradually diminished in quantity. As amenorrhea developed, this tumor began to grow quite rapidly and fearing

¹ Johns Hopkins Hosp. Bull., 1917, December.

efforts were made at reducing the dislocation. The patient was very lame and peroneal paralysis was present. Examination showed the cartilage to be normal, the acetabulum filled with connective tissue, and there was fracture of the rim and cup of the acetabulum. The acetabulum was cleared at operation and replacement was easily accomplished by circumduction. The patient recovered. Drainage with gypsum dressing was applied. Healing was aseptic. The patient walked with crutches in 8 days and the plaster was removed in 8 weeks. One year and 8 months later the patient had very good function, but some limitation of motion. Slight peroneal paralysis was present.

CASE 45 May 10, 1912. Operated upon by A. Gibson; reported in *Lancet*, 1913, February 1. Male, age 49, 9

The acetabulum was reamed out. The head was replaced with difficulty by leverage and manipulation. The trochanter was fixed with screws. The patient recovered

when dismissed October 2

CASE 46 July, 1914. Operated upon by Berard and Vignard, reported in *Lyon méd.*, 1914, cxvii, 707. Male, age 31, 7 months ago fell from a ladder from which he hung suspended by his foot, causing an intrapelvic thyroid dislocation. Reduction was attempted first by a bone-setter and 3 months later by surgeons. The patient was unable to walk and the limb was atrophic. Examination

tional result; good position but some shortening and only 30 to 40 degrees of flexion

CASE 47 January 24, 1916. Male, age 36, operated upon by J. B. Murphy, reported in *Clinics of J. B. Murphy*,

1916, v, 731. Male, age 36, fell from a wagon 16 years ago, suffering an obturator dislocation. Efforts to reduce the dislocation were made several times after failure and one month later the patient had or walking. At o, in a dense mass of connective tissue and the capsule was not recognizable. Through a goblet incision, the external rotators were separated from the trochanter. The connective tissue was incised and the head easily replaced by manipulation. The patient recovered from operation. The limb was immobilized in "frog" position. The patient walked with crutches in 6 weeks. Functional result, very promising.

CASE 48 1889. Operated upon by Parona. Male, age 51, suffered a dorsal dislocation of 2 months' standing. At operation the acetabulum was found filled. Through a Fiorani incision, reduction was accomplished with difficulty. The patient recovered from operation. There was some suppuration.

CASE 49 April, 1917. Operated upon by Gaub, Pittsburgh; personal communication. Male, age 35, was injured 3 months ago, rolled between railroad cars, receiving an anterior dislocation of the hip. No attempts had been made at reduction as the co-existing injuries caused the dislocation to be overlooked. The patient was bedridden by reason of other injuries—fracture of same femur, right humerus and left ilium. Examination showed a stellate fracture of the acetabulum which was filled with connective tissue. Through an anterior incision the acetabulum was cleared and reduction was accomplished with difficulty by means of traction and levers. The patient recovered. A plaster-of-Paris cast was applied extending to the nipple. Functional result was excellent, the patient now works as a conductor.

CASE 50 April, 1919. Operated upon by Buchanan, Pittsburgh, reported herein. Male, age 18, 7 months ago was crushed under a capsized automobile, suffering a dorsal dislocation of the hip. No attempts had been made at reduction. The patient was very lame and walked with difficulty with crutches. A fracture of the acetabulum and ununited subtrochanteric fracture were present, the acetabulum was full, and the head and neck were bound down. Through a Kocher incision, the acetabulum was cleared, the head and neck freed, and reduction was accomplished with difficulty, by manipulation and levers. The patient recovered from operation. A long splint was applied to produce traction in abduction and external rotation. Healing progressed smoothly. Function is good.



Fig 3 At left, photograph of myxoma removed from Case 5, at right, photomicrograph of same specimen

viscid, opalescent, mucoid substance which actually contains mucin. On the whole, the myxomata are rare, as the type tissue of these tumors exists only in the Wharton's jelly of the umbilical cord, which stands as the prototype of the myxomata. These tumors are found in various situations in the body, e.g., in subcutaneous and intermuscular tissues, in connection with tendons, periosteum, joints, and especially the heart. In most instances myxomata are benign, but occasionally they may show signs of malignancy and invade widely. They may even metastasize to other organs. One form of myxomatous tumors, which may attain the size of a coconut, is found in great nodular masses in the retroperitoneal region at the root of the mesentery. The masses are encapsulated and tend to recur after removal. Virchow

fatal February 10, 1918. The patient had been operated upon 7 years previously for appendicitis. Appendectomy gave permanent relief from pain which the patient had suffered for 1 year. Menstruation began at the age of 14, and was regular and normal, up to the past 4 years when the flow became rather scanty and caused pain. The patient complained of abdominal pain, dysmenorrhea, and a tumor of the right labium majus which had been diagnosed as an inguinal hernia.

Operation by J. L. Rothrock, of St. Paul, to whom the author is indebted for the specimen, the case occurring in our department clinic, University of Minnesota. A mid-line incision was made through the

the uterus was retroverted in situ, and there were firm adhesions of the left tube and ovary. Left salpingec-

great development of intercellular substance

3 Myxoma medullary—where we have an increase of its cellular elements and forming the transition to the corresponding cellular form of tumor known as myxosarcoma.

4 Myxoma cavernosum—containing many cavernous blood-vessels

5 Myxoma telangiectaticum—rich in capillaries.

CASE 5 Mrs. H. I., nullipara, age 34, Swedish, weight 180 pounds, admitted to the University Hos-

considered, but no such tumor was present. An incision was then made in the labium and dissection of the tumor begun. The mass ex-

fatty tissue, scant in blood vessels, and many diverticulum-like processes. Distinct cystic spaces were found in the diverticula, but contained no fluid. The tumor proved to be a myxoma. The true origin of the tumor is only speculative.

Pathology Microscopic specimens show the classical histology of myxomatous tissue as found

Our second youngest patient might also come under suspicion of syphilis rather than cancer, the more so, that he is still alive and well now, 14 years since his operation.

His first symptoms appeared at the age of 31 when he noticed blood in the stools, followed later by griping pains. One year after these first symptoms, he came to me and was referred by me to P. R. Bolton, my former attending surgeon at the New York Hospital. Dr. Bolton removed a carcinoma involving an area the size of a silver dollar. A modified Kraske operation was done. The tumor was found just within the anus involving the anterior and lateral walls and was removed, leaving the sphincter to a considerable extent intact. "The specimen consisted of a portion of rectal wall 9 by 3 centimeters. Except for a narrow rim of normal gut, the wall was the seat of an oval ulcerated tumor the edges of which were fairly sharply defined. The tumor tissue was confined for the most part to the mucosa but in several places had penetrated to the muscularis. A microscopic examination showed an adenocarcinoma of a not very malignant type."

of return of this cancer and yet it was removed by very conservative methods. I have seen this man on the street and talked with him within a few weeks. There has never been any serious secondary stricture. I believe the explanation of this is that the growth did not involve the posterior wall of the rectum and the whole circumference of the rectum was not removed.

Wherever the rectum is resected and a circular suture done, a stricture always occurs as a result, and this stricture sometimes causes almost as much trouble as the original cancer. An end-to-end anastomosis of the intestine can be made at any point where the intestine is entirely surrounded by peritoneum, but as soon as we get beyond the rectosigmoidal junction and into the rectum proper where there is peritoneum on the anterior surface only, or still farther where there is no peritoneum at all, resection with circular suture cannot be done without producing a stricture. Such a stricture requires constant dilatation to maintain patency. This case speaks wonders for the possibility of conservative surgery in localized rectal cancer.

USE OF CYSTOSCOPE IN EXAMINING RECTUM

The question arises as to how one is to tell whether such a cancer is localized or not. The use of the cystoscope for this purpose was

suggested by my associate, T. N. Hepburn, and I have not run across, in the literature, any other reference to this method of studying these cancers. Acting on Dr. Hepburn's suggestion, we have used this method a few times in our service at the Hartford Hospital with great satisfaction. The patient is placed in the knee-chest position with the abdomen relaxed. The cystoscope is easily introduced, the rectum washed clear, and filled with water as in bladder examinations. If pains be taken with the washing, it is astonishing what a perfect picture of the growth can be had. And it should be possible to tell with certainty whether or no the malignant ulcer in question involves the whole circumference of the rectum or not.

CONSERVATIVE SURGERY IN CANCER OF THE RECTUM

In the 1917 *Collected Papers of the Mayo Clinic*, Mayo describes the removal of localized papillomatous tumors of the large bowel or rectum by linear incision through the wall of the bowel by the abdominal route and removal of these tumors by conservative methods. The tumors he describes are not actually cancers, but they must be at least potentially so as shown by our Case No. 21 in which A. M. Rowley, in 1914, removed through the anus by conservative methods, a papillomatous tumor in a patient aged 60.

This tumor was regarded at the time of operation as merely a papilloma but on study in the laboratory was found to have undergone carcinomatous degeneration. The patient left the hospital apparently well. A letter received from the daughter a few days ago says: "He never had one sick day from that time until the summer of 1919." From that time on he began to fail. He died November 16, 1919, with symptoms suggestive of cancer of the stomach. This patient had lived and been perfectly well for over 5 years after the removal of an adenocarcinomatous polyp by conservative surgery.

Arthur Dean Bevan in the *Chicago Surgical Clinics* for 1917 describes a method by which he removes the coccyx and then slits the rectum posteriorly from the anus up a distance of 4 inches. This gives him a splendid exposure through which he is able to remove localized carcinomata with the cautery. He then loosely closes this wound and then the

Pain was the principal symptom in 28 cases; blood in the stools in 27 cases. These two symptoms were predominant in the Hartwell series also. Loss of weight was present in 19 cases, obstruction to defecation in 18 cases, diarrhoea in 11 cases, foul discharge in 10 cases, an obvious tumor in the rectum in 8 cases, acute obstruction in 6 cases, incontinence of feces in 6 cases, piles in 6 cases, urinary retention in 3 cases, urinary fistula in 1 case, prolapse of the rectum in 1 case, abdominal tumor in 1 case, and strange to say, ribbon stools in but 1 case.

I found evidences of syphilis or probable syphilis in the hospital records in 5 cases, but I believe this is of no particular value because the internes taking these histories were not looking especially for symptoms of this kind either in the individual or in the individual's family history.

In 6 cases, acute obstruction was the first symptom. In all of these cases, the obstruction had lasted from 5 to 8 days. All did well after colostomy, except the one in which the obstruction had lasted for 8 days.

COLOSTOMY

There may possibly be room for variable opinions as to whether a colostomy in hopeless cancer of the rectum affords sufficient relief to justify it, but there can be but one opinion as to the surgeon's course of action.

If we see a man drowning, we do not consider whether that man's life if restored will be a blessing to himself and those around him. Neither do we consider the chances as to whether the venture will be successful. We throw him a rope if we can, concentrate our minds on the doing and leave the philosophy for the firelight and the pipe dream. Such is the rule of surgery.

I think there can be no doubt, however, that the colostomy in itself, not only relieves obstruction but at the same time decreases very markedly the irritation of the cancerous ulcer and removes a very considerable source of chronic poisoning for the individual by draining the cesspool of dilated colon proximal to the partial obstruction. Robert Abbe laid great stress on these features. The neglected cases are frequently complicated by fistulous

tracts and become indurated, septic masses of tissue. These must be benefited by emptying the colon and so putting at rest the parts involved. Many writers say that an apparently inoperable case occasionally becomes operable as the result of colostomy.

A great many cases in this series doubtless had their lives prolonged very materially by this operation alone. It was done 18 times as the only surgical measure undertaken. Only 2 cases died from operation.

A colostomy is not the dreadful thing we used to think it was. The patient I have previously noted, used a colostomy for 16 years and I know it was the least of her troubles. She merely wore a belt with a single gauze sponge beneath it. She had full warning when her bowels wanted to move and never soiled her clothes.

One patient on whom I did a colostomy in 1915 wore nothing whatsoever over it and lived 8 months thus. This was a permanent colostomy, the sigmoid having been cut in two and the proximal end brought up through the left rectus muscle. My note of June 2, 1916, says: "Colostomy gives absolutely no trouble. Does not even have to wear a pad over it. A retracted, red dimple with hole invisible."

I believe this is the best form of colostomy, bringing the opening almost as high as the navel, leaving a good loop of sigmoid, and bringing the gut straight through the middle of the left rectus muscle.

I must admit some doubt that any twist or attempt at valve formation can long remain except in the operator's fancy, but perhaps I am mistaken. I have usually drawn the gut straight through the abdominal wall in the simplest, most direct fashion. And, so far as I know, with the exception of my most recent case who reports that he is wearing a colostomy cup, none of my patients have ever wanted anything more than a gauze pad and belt.

SYPHILIS OF RECTUM COMBINED WITH CANCER

One case in which I did a permanent colostomy for what I supposed was an inoperable and hopeless cancer of the rectum, remains a conundrum and is well worth relating.

the name myosarcoma Ritter described a case of a large fibromyoma of the uterus which showed sarcomatous changes at the center and to which he gave the name myosarcoma Von Kahlden reviews the literature and, after describing many reported cases, some of which were probably cases of true sarcoma as well as malignant leiomyomata, he describes a personal case which is of especial interest because he claims one can demonstrate histologically a direct transition of a fibromyoma to a sarcoma Williams, after a careful study, does not see how Von Kahlden can exclude the possibility of the sarcoma cells springing from the interstitial connective tissue, although he himself described a case in the sections of which he could demonstrate an actual transition of myoma cells to sarcoma cells Almost all authors of this period speak of these tumors as myosarcoma, but as Ribbert points out, the name sarcoma should be reserved for malignant tumors springing from connective tissue For the smooth muscle tumor which has undergone malignant change he suggests the name of malignant myoma; and he would only use the term myosarcoma for the extremely rare cases when true sarcoma and myoma exist at the same time producing a mixed tumor Ribbert also emphasizes the fact that the term malignant degeneration of a "fibroid" is improper usage inasmuch as a tumor is not a regressive but distinctly a progressive process. Much discussion has

arisen regarding the best terminology to use, to designate these tumors arising from the smooth muscle type of cell. Mallory would include all tumors both benign and malignant which are composed of the smooth muscle cell type under the general term leiomyoblastoma Williams prefers the term myomasarcomatodes because it signifies a sarcoma like tumor which springs from the muscle cells of a myoma Aschoff, Kauffmann, and Hertzler use the term myosarcoma, while MacCallum prefers the term malignant myoma It would seem most rational to use the term suggested by Morigo, and also used by Ghon, viz. malignant leiomyoma, as this covers the ground and instantly shows one that we are dealing with a malignant tumor comprised of the muscle type of cell.

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body have undergone spontaneous fibrosis and cure.

OPERABILITY AND MORTALITY

In the series of cases under present consideration, there were fourteen attempts at radical surgery; three by the sacral route only, made operative recoveries. One case was operated upon by the abdominal route only and made a recovery. Five by the combined abdominal and sacral routes in two stages, also all made operative recoveries. In five the two routes were combined in a single stage operation, and all died as a result of the operation. This has been the experience of most operators, that the combined operation in one stage has a very high mortality.

By comparison with the great clinics of the world, our little series of 53 cases is small. For the most part, it represents palliative treatment only. In 18 cases, no operation of any sort was undertaken. Usually this meant that the patient had a sloughing mass in the pelvis without obstruction. In one or two instances, a colostomy which might have been done for relief, was refused by the patient. In 4 cases, an operation through the anus was done, usually for examination, relief of septic conditions, etc. In only 14 cases was radical surgery attempted, an operability of 27 per cent.

Cripps, of St. Bartholomew's Hospital in London, reports an operability of 25 per cent, even less than ours.

Lynch, of New York, reports operation attempted in 60 per cent of his series; more than twice as many attempts as in ours. His operative mortality was 16 per cent; ours was 36 per cent. However, of the last 6 attempts in the Hartford Hospital, only 1 has died, making it in late years 16.6 per cent.

The Mayo Clinic puts their operability at 53 per cent with a rise to 72 per cent in the last 3 years. Their mortality has been 15.5 per cent reduced in the last 3 years to 12.5 per cent.

It is manifest in all these series of cases that the operability has been increasing rapidly in very recent years and the operative mortality markedly decreasing.

Wherein have we failed then? Of course, in early diagnosis. That goes without saying. Some cases cannot be diagnosed early. Others, it seems, might be.

We have not employed surgery that was daring enough.

We have thought of cancer of the rectum as a hopeless condition. It is not. Cripps reports one proved case that lived 31 years after radical operation and died at the age of 84. It can be cured. Let us have the courage to make the attempt.

about 6 weeks after the first. A careful search of the common duct was made for a stone or evidence of obstruction, but none was found. The liver was not enlarged. The common duct was not opened but should have been. In the absence of a satisfactory explanation of the obstruction it was assumed that this was a case of *obstructive biliary cirrhosis of an ascending infection*, and with that in mind an anastomosis was made between the gall-bladder and stomach. In about 2 weeks the patient had a recurrence of the pain and increasing jaundice, but this was the last attack. Shortly after this the stools became normal, the icterus slowly disappeared and the patient left the hospital November 23, very much improved.

She writes under date of February 5, 1920, that she has entirely recovered and weighs 5 pounds more than before the operation.

The diagnosis in this case rests between infective biliary cirrhosis and a stone in the bile-duct within the liver.

Summarizing briefly, we reiterate that the operation of cholecystgastrostomy has a

definite place in surgery, and this may be said of it:

1. It is indicated in an irremediable obstruction of the common duct or division of the duct which cannot be successfully sutured.

2. For long continued drainage in infective biliary cirrhosis it is superior to cholecystostomy in that nutrition is maintained.

3. It is not a difficult operation, being easier and safer to perform than an anastomosis between the gall-bladder and the small or large intestine.

4. There is no danger of an ascending infection.

5. The presence of bile in the stomach, while unphysiological in a degree, is consistent with good digestion, and offers no argument against the operation.

6. The suture method of anastomosis is the only one to be employed.

FURTHER OBSERVATIONS ON THE FUNCTION OF THE CORPUS LUTEUM¹

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ACCORDING to our present conception, the ovary is a complex glandular organ with at least two quite distinct functions. First, the production of ripe ova and, second, the elaboration of one or more internal secretions. While neither of these functions is absolutely necessary to the life of the individual, the former is positively and the latter probably absolutely necessary to the propagation of the species and the latter very essential to the well-being and comfort of the individual. Up to the time of the advent of abdominal surgery, few, if any, suspected that the ovaries had any function other than the production of ova, and if one is to judge by

for the comfort of the operators they began to take heed. The practice of removing both ovaries except when absolutely necessary was discontinued some 20 or 25 years ago, and since that time also numerous studies have been undertaken to determine the exact function of these organs. While much has been learned from these studies, much is still to be learned.

Several years ago some very interesting data, collected by a number of veterinarians, came to my attention. These data have in part been checked up by me on the human female and are here presented with the hope that they may shed some additional light on the rôle played by the ovaries. I here confine my observations very largely to the function of the corpus luteum and the influence it seems to have on pregnancy, sterility, abortion, and intra-abdominal hæmorrhage simulating extra-uterine pregnancy.

gynecological surgery became generally practiced. When the number of nervous wrecks due to this practice became too numerous

¹Read before Southern Surgical Association, December 17, 1919.

Twice the patients insisted that the hæmaturia was often terminal. In one of these there was no pain of any kind, and I had the fulgurating machine all set up, only to find a profuse right renal hæmaturia which stopped within 24 hours after a pyelogram and has not occurred since, a lapse of 10 months. In the other case there was never seen any profuse bleeding from either ureter, and in spite of a nephrectomy for supposed tuberculosis there have been two attacks of bleeding since, so that his blood may have come from a congested bladderneck, or from the ureteric orifice, as the mouth of the right ureter was noted as being red and oedematous

TREATMENT

Nineteen cases out of this series were operated on. Three nephrectomies were done, one primarily because the bleeding was so profuse as to threaten the patient's life and nothing less than nephrectomy was safe. One was removed secondarily because of bleeding after a nephrotomy, and one because of a supposed tuberculous infection. In two of these cases the bleeding has never recurred, in one there have been two attacks of bleeding since. Nephrotomy has been done four times. Two of these cases were not helped, one being made so much worse that the kidney had to be removed, and one case was apparently cured but continued to have microscopic blood. Nephropexy was done once where there was a movable kidney, with relief of symptoms. Nine cases had a decapsulation done, once accompanied by a nephrotomy and once by a pyelotomy. Of these 9 cases 5 were cured so far as our records show, 2 were temporarily helped but recurred later, 1 of these being now recognized as a chronic nephritic, and 2 were not influenced by operation. In 1 of these 5 cases the bleeding was stopped but the pain continued, which was contrary to the usual story, as the pain was more often relieved than the bleeding. In none of the 5 do our records prove a cure, as one case had previously showed a natural remission of 3 years. The kidney was merely handled in three operations, and in 2 of these the bleeding stopped. The third case turned out to be a horseshoe kidney and the condition

was not helped. In 5 cases the renal pelvis was washed out and in 3 cases there has been no trouble since. One of these cases was washed with 1:1000 silver nitrate and 2 with adrenalin, and on the other 2 adrenalin and hæmoplastin have failed to help. In 3 cases, bleeding stopped completely after the pyelogram. In 4 cases, there was no treatment of any kind, and in 2 of these the mere passage of the ureteral catheter was followed by cessation of bleeding, and in one the bleeding stopped before there was any chance to investigate. Both of these cases have a definite story of trauma which probably accounts for the condition. In these it is obvious that it would stop regardless of treatment. The other I believe was a mild coccus kidney following tonsillitis, which I will discuss more fully later. This array would seem to suggest that you can choose your treatment, depending on how vicious you happen to feel at the time, and regardless of whether you do much or little you may or may not relieve the bleeding. Whether you cure or not is still more problematical. Where a definite condition is remedied, as fixing a floating kidney or a nephrectomy is done for cavernous angioma, the patients are of course cured; otherwise the results of any method of treatment are doubtful.

The renal function was rarely low. The function of the two kidneys generally agreed within the limits of permissible error; but in one case which a year later proved to be a nephritis there was no demonstrable function from the bleeding side and a normal function from the other, and in another case it was 30 on the affected side as against 50 on the sound side. The pyelograms showed no startling facts. In 6 cases the shadow was not normal; in 1 case the cupping was obliterated, in 2 cases the pelvis was "irregular" but obviously not pathological; in 3 cases it was considerably deformed and materially aided in the decision to operate. In 1 of these 2 cases, the kidney was removed and examination showed that the calyces were somewhat elongated, but for no obvious cause. Yet even here there was not the elongation so characteristic of malignant disease of the kidney. In the other 2 there was also a de-

CASE 1. Miss A. N., age 20. Present illness began about 6 weeks ago with severe pain in right lower quadrant of abdomen, pyrexia. Menstruations regular 28-day type, except has not menstruated during past 10 weeks. Tender mass, size of large orange, to the right of the uterus. Uterus fixed. Median laparotomy, appendix caecum, omentum, loop of small intestine, right tube all involved in a mass around an abscess of right ovary, about the size of a lemon. Adhesions loosened, appendectomy. Right oophorosalphingectomy. Left tube thickened, size of little finger, excised. Left ovary containing false corpus luteum, resected. Patient menstruated 36 hours after operation.

Just why this patient missed two menstrual periods and then began to menstruate 36 hours after the operation I am unable to say, but I believe her case belongs in this general category.

That expression of a retained false corpus luteum will bring on heat in the cow has been demonstrated by veterinarians in literally hundreds of instances. So far as I am able to determine from the literature, the observation that injury, expression, or excision of a false corpus luteum will bring on menstruation in the human female has not been made or at least not emphasized. Rubin¹ in his paper which while he speaks of the inhibitory effects on menstruation of ovarian cysts and gives detailed histories of rupture of false corpus luteum does not state specifically whether such rupture brought on menstruation or not.

Just what relation to the whole sex cycle menstruation bears I have not been able to determine definitely either from my readings or from my own clinical experience. But that menstruation in the human female bears a close relation to heat in the cow is evidenced from the fact that expression of a false corpus luteum from the ovary of a cow will cause heat within 48 to 120 hours in every instance, while expression or excision of the false corpus luteum in the human female causes menstruation in from 12 to 36 hours in every case. Just why menstruation should occur more quickly in woman than heat in the cow when the false corpus luteum has been expressed is not clear. Theoretically one would expect œstrus to precede menstruation and menstruation to be the terminal stage of the sex cycle in those cases where the

ovum has not been impregnated. In support of the statement that menstruation invariably occurs within 12 to 36 hours after the expression of false corpus luteum in the human female permit me to report very briefly the essential points in the following nine histories. I have a number of other similar cases but I believe these will suffice to establish this point.

CASE 2. Jessie S., age 20. Low medium incision; appendix somewhat inflamed and congested. Both tubes tortuous, thickened to the size of an index finger, closed at distal ends. Left tube adherent surrounding ovary with which it makes a mass the size of a small lemon. Both tubes and left ovary removed. Left ovary contains a false corpus luteum. Last menstrual period began 17 days before operation and persisted for 2 weeks so that she had been clean only 3 days. Twenty-eight day type. Patient began to menstruate 36 hours after operation and 11 days ahead of time.

CASE 3. Mrs. J. A., age 45. Double salpingitis with left ovary and tube adherent to sacrum. Double salpingectomy; portion of left ovary contained a false corpus luteum resected. Menstruation irregular but never too frequent before operation. Began to menstruate 24 hours after resection of ovary though she had been over her last menstrual period only 1 week.

CASE 4. Mrs. A. L., age 35. Low medium laparotomy, loosening of adhesions of mesocolon to former appendix scar. Removal of two fibroid-sized fibroids from uterus. Removal of both inflamed tortuous tubes and resection of adherent left ovary containing a false corpus luteum. Began to menstruate 30 hours after operation though previous menstruation had started 12 days before operation and ended 8 days before operation. Her usual menstrual flow 3 or 4 days, of the 26-day type and very regular.

CASE 5. Mrs. S. R., age 30. Low medium incision, appendix inflamed, thickened. Appendectomy. Uterus and both adnexa in a mass in cul-de-sac. Right ovary and both tubes removed. In loosening adhesions about left ovary corpus luteum in same was injured. Patient began to menstruate in 30 hours though her previous menstruation had stopped only 3 days before operation. Regular 28-day type.

CASE 6. Mrs. F. H., age 26. Low medium incision; appendix inflamed and adherent. Patient just over an acute appendicitis; appendectomy. Left ovary adherent, loosened. In doing so, injured false corpus luteum. Menstruated 36 hours after operation.

CASE 7. Mrs. G. E., age 36. For a number of months has complained of severe pain in left lower quadrant about one week after menstrual period. Menstruations regular 28-day type. One week after second last menstruation examined, left tube found considerably enlarged. Present condition,

¹ Rubin, I. C. Surg., Gynec. & Obst. 7:1917, Nov., 443-453.

As proof of the importance of chronic nephritis as a cause of bleeding the section on "hæmaturia" in Richard Cabot's *Differential Diagnosis* gives good evidence. The cases studied all occurred prior to 1911 at the Massachusetts General Hospital, and in this study chronic nephritis comes first with 139 cases, all other pathological conditions of the kidney or bladder together, 128, and unknown causes, 78; so that the nephritis is responsible for almost as many hæmaturias as all other causes put together. Today there is no reason to believe that the proportion would be different, as the unknown causes, then so large, would probably work themselves down to 7 or 8 instead of 78, and the rest group themselves in about the same proportion as the other cases.

So far as I have been able to find out, tumor of the kidney need not be considered in this study, as no case of kidney tumor has been discovered on the genito-urinary service when operating for supposed essential hæmaturia. Moreover, Barney in his study of the renal tumors at the Massachusetts General Hospital, found only 18 out of 74 in which there was hæmaturia without pain, only nine with hæmaturia and without a palpable tumor, and only three where hæmaturia was the sole subjective symptom; so that I believe it is fair to assume that at least the majority of such cases can be diagnosed before operation. When we consider the diagnosis of renal varix or papillitis, it is more difficult to make any accurate statement as regards frequency of occurrence; but I believe that it seldom is the primary, though it may be the main, cause of bleeding, and when it occurs may be due to some other underlying condition, which so changes the blood supply of the kidney that the congestion of papillary veins normally present results in varicosity and bleeding. In this series it was proved only once. In 1898, the first case of varicose veins of a renal papilla was actually demonstrated. Since that time several other cases have been reported, notably 6 by Fenwick and 1 by Cabot from the Massachusetts General Hospital; but in comparison with the total number of cases in which diagnosis has been difficult the number is few, and I do not think

we can consider them as an important source of these unexplained hæmaturias. There has been a more or less accepted belief that failure to make a diagnosis in these cases means either malignant disease or varix, and accord-

were present, decapsulation would stop the bleeding. The report of the cases in this paper tends to show that this is not a good ground for operative interference, for, as shown earlier in this paper, operation is no more likely to stop the bleeding than in; nant disease exploration.

It is undoubtedly true that certain cases where the kidney has been examined by a good pathologist have failed to show any lesion to account for the condition. Morris, in his work on the kidney and ureter, mentions 3 cases in which he operated, removing the kidney, but was unable to demonstrate any lesion pathologically. In addition is the case which I have just reported. If we recognize the fact that a nephritis can be local in character, it is possible to understand how, even in the hands of a good pathologist, areas of damage might be missed. This can, of course, be true if we are to include under "nephritis" cases of focal infection, the so-called "focal infectious nephritis," cases which show for instance (to repeat the case just mentioned) "pinheadsized, yellow opaque spots which microscopically show collections of small round cells with fibrosis." In such cases there may be bleeding due to these local areas even though they are very small and difficult to find.

In a recent paper, O'Neil differentiates between toxic and infectious nephritis. For the practical purposes of treatment this seems to me on the one hand to bring us into the realm of hair-splitting, and on the other, into the borderland of cases lying between the so-called "surgical kidney" and what we have always considered the "medical" nephritis. The definite etiology of the various nephritides is, of course, not settled, but so far as we know anything about it no cause (outside of the

is to avoid traumatism of the ovary containing the true corpus luteum if one wishes to avoid interruption of pregnancy. I have operated on a goodly number of pregnant women in almost every stage of pregnancy for a variety of abdominal conditions, such as intestinal obstructions, hernia, appendicitis, gall-stones, and even fibroids of the uterus, and with the exception of Case 11 herein reported never caused an abortion and I believe this has been possible because I have always been very gentle with the ovaries at the time of such operation, not because I have known the fact that injury of the true corpus luteum would produce abortion, but because I have made it an invariable rule to treat all intra-abdominal organs with the greatest care and consideration.

The following history is a fair illustration of this class of cases.

CASE 10. Mrs. E. A., age 25. Chronic intestinal obstruction with acute exacerbation. Low median incision, omentum slightly adherent to old laparotomy scar. A thin band extending from one loop of small intestine across another loop to stump of left broad ligament making partial obstruction of the bowel. Band ligated double and severed. Uterus size and shape of large Bartlett pear, soft and in normal position. Right ovary contains true corpus luteum. Uterus and ovary handled with the greatest gentleness. Patient's last menstruation 60 days ago. Wound closed, patient made an uneventful recovery, no uterine contraction or abortion. Six months later patient in good condition, pregnancy progressing normally, and expects to be delivered in about 2 months.

The tolerance of the pregnant uterus to traumatism was indelibly impressed upon me some years ago. A woman three months pregnant with multiple uterine fibroids, one on the posterior surface of the uterus at the junction of the body and neck insisted upon having an operation. She had lost two former pregnancies, one at the fourth month from abortion and the other at the time of birth from craniotomy, because the largest fibroid on the posterior surface of the uterus had made normal delivery impossible. She was very anxious to be the mother of a living child and argued that having failed twice she was willing to take almost any risk to save this pregnancy. The small fibroids on the fundus of the uterus were easily removed but the one on the posterior surface offered great technical

difficulties. The true corpus luteum this fortunate outcome would not have occurred and the resultant abortion would probably have been ascribed to excessive traumatism of the uterus.

The importance of avoiding injury or excision of the true corpus luteum in case of pregnancy is further emphasized by the following two histories.

On April 4, 1910, I made a preliminary report on this subject before the Chicago Surgical Society. Shortly after, I met a colleague, who after greeting me accosted me in the following words: "Your observations on the function of the corpus luteum explains to me now why Mrs. X aborted," and then gave me the following history: "About 6 years ago I operated on Mrs. X for an acute appendix. She was 3 months pregnant and I took particular pains not to manipulate, traumatize, or even touch the uterus, but finding what looked to me as an enlarged cystic right ovary, I excised it. The woman aborted in 38 hours."

CASE 11. On April 8, 1910, Mrs. J., age 20, came to me for examination, from whose history I take the following essential points. One child one year ago, no miscarriages. Never strong since birth of child, has pain in left side, appetite poor, quite nervous, bowels constipated, nursed baby up to a few days ago. Considerably emaciated. Present weight 95 pounds, one year ago weighed 140 pounds. Tongue thickly coated, perineum somewhat relaxed, uterus in normal position and fairly movable, cervix normal, right adnexa normal, left ovary and tube distinctly enlarged and tender. Laparotomy advised, but patient did not come to the hospital until June 11, or 9 weeks after the first examination. Examination at this time showed no change. Patient was laparotomized the following morning. Appendix was found slightly adherent and constricted and was removed. Left tube enlarged and inflamed, distinct varicocele of left broad ligament, enlarged left ovary containing either a true or a false corpus luteum. Left oophorosalphagectomy. Thirty-six hours after the operation the patient aborted and on careful inquiry it was discovered that she had menstruated only once since the birth of the last child, namely, on May 8 and had missed her menstruation on June 5.

This experience emphasizes two things: that the excision of the true corpus luteum causes abortion and that if a considerable interval intervenes between the first history taking and the operation, the first history should be carefully brought down to date, particularly if the patient is a female of the child-bearing age.

In recent years a number of articles have appeared in the medical journals emphasizing the fact that in many cases of supposed

tooccus. A young man was on his way to school when he had a severe hæmaturia. His previous health was good except for repeated attacks of tonsillitis. Examination showed streptococci from both kidneys, with blood and pus. One kidney had no function at all and the other a much diminished function. On removal, the tonsils showed a culture of streptococci. In this case the damage had been done, and the removal of the primary focus could not cure because a progressive glomerular nephritis had long been present.

The third case does not show us the organism but apparently gives the focus of trouble. Male, age, 44, brought to the emergency ward because of severe right renal colic. So far as he knows he has been perfectly healthy up to about 3 hours ago, when without warning he began to have pain in the right flank radiating down to the groin. This shortly became very severe, and he was sent to the hospital.

Urine passed about the time of onset was normal in appearance, so far as he can remember. The first urine passed after reaching the hospital, when the pain was beginning to subside slightly, was bloody. General examination at that time was negative except for slight costovertebral tenderness. Cystoscopy was negative except for bleeding from the right ureteric orifice. X-rays were negative. A two-hour red test was 55 per cent. The patient at that time did not wait for further examination, as he felt perfectly normal. Three weeks later he had another attack similar in character. At this time a more careful examination was made and the medical consultants went over him with reference to chronic nephritis. The first specimen of urine passed contained blood, specific gravity 1008; slight trace of albumin; no sugar. The sediment contained no organisms, nothing but blood. Bleeding stopped in 36 hours. The urine was then acid; specific gravity 1020; no albumin; no sugar; blood pressure

110-120; heart normal. A second red test 65 per cent. Heart shows no abnormality. Medical diagnosis: a slight amount of arteriosclerosis, but no evidence of chronic nephritis. The patient had no more attacks of renal colic, but had a recurrence of previous trouble with the throat for which he had been treated in the out patient department under the diagnosis of chronic tonsillitis, and for which operation had been advised. He was then seen by the medical department in the out patient department for his general condition, and sent into the house with a diagnosis of sub-acute nephritis. Study at that time showed a blood pressure of 180-115, with a specific gravity fixation of only 1020 to 1022, and a positive diagnosis of chronic glomerular nephritis was made.

Two more cases are given in detail, as they present either an early unrecognizable nephritis or a prenephritic condition causing bleeding.

CASE 4. Male, age 50, had suffered with painless hæmaturia for 14 months. General condition excellent. Examination showed right renal hæmaturia with sterile urine. Blood pressure 150-80; split function, left 25 per cent; right, no function. Pyelogram not satisfactory. Total function 45 per cent. Medical study showed no evidence of nephritis. Operation showed nothing and decapsulation was done. Bleeding was much better for some time but in a few months returned, and one year later his out patient record shows that he is under treatment with positive evidence of chronic nephritis.

CASE 5. A chauffeur, age 28, had to give up work because of pain in the left flank. This had been accompanied by red urine for several weeks. Examination by a medical man and by X-ray showed nothing to account for the bleeding. Cystoscopic examination showed a slightly bloody jet from the left ureteric orifice. Split function at that time and 2 months later showed a good output in the proportion of 10 on the right to 7 on the left. Pyelogram showed a perfectly normal outline. Following these examinations the bleeding perceptibly diminished for several weeks, but the patient felt no better and looked pasty. Further examination showed a blood nitrogen which was normal. Blood pressure normal, specific gravity fixation showing variation of eight points, but cystoscopy with catheterization of both kidneys, at a time when no red blood-cells showed under the microscope, showed a large amount of albumin from each kidney. The patient has been tested without result for the various strains of bacteria supposed to produce damage to the kidney.

The first three cases show plainly the primary focus. In the first case tonsillectomy will probably safeguard the future. As the organism was a staphylococcus, we cannot assert that continued assaults on the kidney would have caused a nephritis. It might have resulted in a severe coccus kidney, or there might have been no further renal complication from it. In the second case it is safe to claim that in the early or prenephritic stage removal of the tonsils would probably have prevented the later damage. In the third case, likewise, although no organism was identified it would seem as though early tonsillectomy might have prevented the late kidney damage. In the fourth case no focus was recognized, and in the fifth which I think is still in the prenephritic stage, no primary focus can be found.

That some of these cases have gone for a long time without evidence of a nephritis does not I believe destroy the argument for the

subject of this paper except for the likelihood of spotting at the time the menstrual period should occur, in spite of pregnancy.

In 1669, Vassal (3) and Mauricau (4), put the first case of pregnancy in a rudimentary horn on record. Kussmaul (5), of Heidelberg, in 1859, published a classical work on the absence and defects of the uterus, in which he gathered 12 scattered cases of pregnancy in a rudimentary horn. Sanger (6), in 1883, collected 27 cases with a mortality of 88 per cent. Only four of these were treated by laparotomy Hammelfarb (7), in 1888, brought the total to 34, Sodan (8), in 1898, to 55, Kehrer (9), of Heidelberg, in 1900, to 82, Brooks Wells (10), writing on "Duplication of the Uterus and Vagina," in 1900, pointed out that a more careful microscopical study of the pedicle in these cases will show a minute canal through which impregnation probably occurs from below. Werth (2), in 1901, collected the total to 100 cases and showed that in less than 20 per cent was there a macroscopical canal connecting the horn with the main uterine body. It is of interest to note that of these first 100 cases reported, only 2 were from the United States, Wells' case and one reported by Munde (11). A fairly thorough search of the literature since 1904 contributes 46 (12, 53) more cases including our own 2 cases.

Since the epoch closing with Werth's very complete study of this subject, the cases have been considerably increased without any corresponding gain in knowledge. In that era of study of this subject, it was made the theme for the inaugural address of three of the leading professors of Continental universities. Probably the most that there is to learn about this condition has long since been written, but certain very interesting points remain to be cleared up. There is more work to be done on the mode of impregnation, and on the early diagnosis before rupture.

The generally accepted explanation that the pregnancy is the result of migration of the spermatozoon up through the well developed uterus and its tube, out across the peritoneal cavity, and into the tube of the rudimentary side seems incredible. I agree with Wells that

a more careful microscopic study of numerous sections of the pedicle will probably show a minute canal, as his did, about the size of a bristle, lined with columnar epithelium, which is the portal most frequently used by the sperm cell to meet the ovule from the ovary of the rudimentary side, or from the other ovary. This opinion is borne out by recollecting that the muellerian ducts in early foetal life are solid strands of tissue, which contain in their center a microscopic canal lined with columnar epithelium.

Several cases are on record of the presence of the corpus luteum in the other ovary proving the transperitoneal migration of ovula; and it is not to be denied that in rare cases a fecundated ovum may cross the peritoneal cavity.

It was a failure to realize the importance of a microscopical study of the pedicle in our own cases which leads to this plea for such investigation of all cases that shall present themselves in the future.

Clinically this form of ectopic pregnancy is divided into two distinct classes of cases: The first, by far the more numerous group, in which the pregnancy goes on until the fourth or fifth month and then rupture occurs with terrific abdominal bleeding. In the second class, the hypertrophy of the uterine tissue in the sac is sufficient to allow the pregnancy to continue near to term, with the advent of labor. Ninety per cent of the cases of which I was able to read the reports were in the first class, and 10 per cent in the last. That we may see the entirely different clinical picture in these divisions, I will briefly recite the history of 2 cases which have come under my observation.

CASE 1. Mrs. —, No. 79,304 was admitted to

ried 2 years, one previous pregnancy resulting in a 7 months' premature birth, 10 months ago. The child lived 6 weeks. The patient now has been pregnant 4 months; last menstruation June 20, 1918, since which time she spotted at each succeeding menstrual date

DISSECTING INTERSTITIAL ABSCESS OF CÆCAL WALL

By FREDERIC HAGLER, M.D., St. Louis

INTERSTITIAL abscess of the cæcal wall is rare. We are led to this belief by the fact that we have not previously encountered it during an extensive experience of several years in connection with civil and military institutions. A. E. Halstead (1), of Chicago, has seen it once; inquiry has failed to bring to light any other similar cases. We find no references in the more recent literature, while voluminous records of the earlier literature are almost worthless on account of incorrect nomenclature and confused pathology. Knowledge of surgical diseases of the appendiceal region is now so definite that reports of unusual processes are desirable, especially those that may have contributed to the confusion of some years ago. The following case is sufficiently rare and interesting to warrant a report as much in detail as our retained notes permit.

D—, C—, Pvt. M. D., B. H. 87, was admitted to Camp Hospital No. 33, Brest, France, June 4, 1919

The history was of acute onset of abdominal pain about 18 hours prior to admission. Pain was at first colic-like and general over abdomen, but soon became localized to right lower quadrant. Patient was nauseated upon admission, had vomited two or three times, and had a chill earlier in the day. The bowels moved without catharsis soon after onset of illness.

Examination. Well developed and well nourished white soldier. Tongue heavily coated. Lungs and heart normal. Marked abdominal rigidity, more pronounced on right side. Very tender in McBurney's region. No mass palpable. Temperature 103.2°, pulse 96. Leucocyte count 22,000.

The typical history and objective findings led to the diagnosis of acute appendicitis, and immediate operation was performed.

Operation. Ether anæsthesia. Kammerer incision. Upon opening and exploring the peritoneal cavity the appendix was found to be but slightly injected. A firm mass, regular in outline, the size of a large fist, was found involving the entire cæcum. There were no adhesions, the cæcum was dusky in appearance but was mobile, and the entire cæcal mass was brought outside the peritoneal cavity. The general appearance of the mass suggested new-growth, while the clinical history spoke

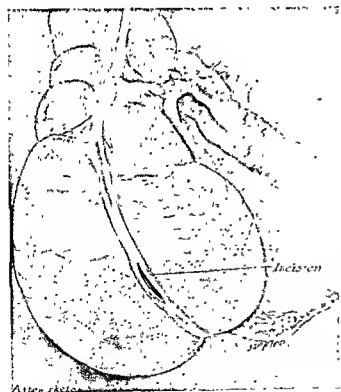


Fig. 1. Drawing showing line of incision.

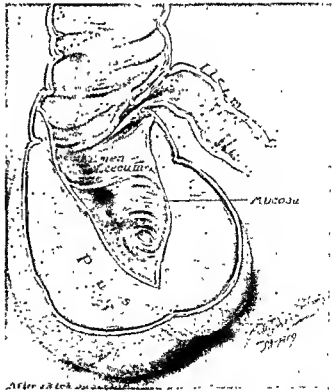


Fig. 2. Abscess of cæcal wall.

to find in a few moments that he was in the abdominal cavity, the walls of the pregnant uterus being to the right of the split in the cervix.

I opened the abdomen at once and delivered the dead child by abdominal hysterotomy. Then it was noted that there was a tube and ovary on only the right side of the uterus, and in exploring for the other, the unimpregnated, good uterus popped up from behind the pregnant uterus. In palpating the inside of the pregnant uterus we found it to be a cul-de-sac with no canal connecting it with the cervix, and upon enlarging our caesarean incision in the abdominal wall, we found the band connecting the rudimentary pregnant uterus with the other. The vaginal incision had done so much damage to the small good uterus that it was necessary to do a supracervical hysterectomy. The patient had an uneventful convalescence, without any further eclamptic seizures, and left the hospital in 3 weeks, perfectly well.

In considering the diagnosis of this abnormal pregnancy, the first class is most frequently confused with ordinary tubal pregnancy; the latter group with normal full term pregnancy; and labor with cervical dystocia.

In making the diagnosis in the first class, before rupture, the history will help in that pregnancy has advanced to a considerably further period than would be expected in a tubal pregnancy. Pain begins much later. The spotting, coming from the unimpregnated uterus, is frequently accompanied by pieces of decidua and is likely to be synchronous with the menstrual date. Before rupture, bimanual examination shows much less sensitiveness on movement of the cervix than in the ordinary tubal pregnancy. There is more enlargement of the good uterus and distortion of its cavity. The mass is firm and usually connected to the uterus by a much broader attachment, a deep sulcus being present between the uterus and the pregnant mass.

These cases are sometimes mistaken for pedunculated fibroids, but careful palpation shows the round ligament coming off the anterior surface and the tube and ovary out beyond it.

In the tragic stage the history of the length of the pregnancy gives one his only suggestion, before the abdomen is open, that it may not be an ordinary ruptured tubal pregnancy.

In the full term cases, again the diagnosis may be quite puzzling. The case goes on in labor, with the presenting part dipping well into the brim of the true pelvis; but careful examination shows the cervix off to one side, not dilating, or shortening. A sound inserted into the cervix goes into the small non-pregnant uterus which can be felt to one side by bimanual examination. Abdominal examination shows the uterus early in a tonic spasm causing the death of the fetus. So rare is this condition that it is no wonder that it is confounded with the more common lesions one is constantly dealing with.

In neither of the 2 cases presented was the diagnosis made before the abdomen was open; and yet I am sure that if I had the above facts firmly in my mind the diagnosis could have been made in both cases.

The treatment, provided the case comes

horn, it should always be removed as a prophylactic precaution. The succulence of the tissues in pregnancy makes the removal of the ruptured horn with its tube and ovary a matter of only a few minutes effort.

At or near full term, abdominal delivery and removal of the impregnated part of the uterus is always indicated since no drainage is obtainable from below. When in the abdomen, it is very easy to mistake these advanced cases for pregnancy in a normal uterus, unless the precaution of looking for both tubes and ovaries is kept in mind, the little normal uterus frequently being entirely hidden behind the pregnant rudimentary horn.

CONCLUSIONS

1. With more careful history and examination, the diagnosis of this condition can usually be made.

2. In all cases of rudimentary cornua of the uterus the pedicle should be examined by serial sections to confirm the presence of a microscopical canal through which impregnation occurs.

3. All rudimentary cornua should be removed so soon as the diagnosis is made.

BENIGN TUMORS OF THE LABIA¹

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THE vulva may at any time become the seat of some form of neoplasm. They are quite rare, however, when compared with the frequent occurrence of tumorous growths in other areas of the urogenital tract of the female. It is exceptionally unusual to encounter tumors of the labia minora; only a very few are reported in the literature. The majority of these growths are confined to the labia majora. The cyst is without question the most frequent tumor met with in this region and usually arises from the Bartholin duct or gland, primarily caused by infection, trauma, or simple hypertrophy of the gland. They also may originate from hæmorrhages into the gland or duct, forming primarily a hæmatoma, which later undergoes a cystic degeneration. Dermoid cysts may occur in this locality but are exceedingly rare. Fibrous growths are second in frequency; lipomatous, malignant, myxomatous and leiomyomatous tumors occur in frequency of order named.

The series herein reported occurred in the writer's practice in the period of one year, which was considered unusual and unique and of sufficient interest to warrant reporting in detail.

CYSTS OF THE LABIA

Sebaceous cysts of the labia majora and minora are not uncommon. Occasionally thin-walled, pedunculated cysts are met with containing a clear fluid. They probably represent distended odoriferous (Tyson's) glands.

Cystic tumors of the labia majora are usually retention cysts of the Bartholin gland or duct due to obstruction, of inflammatory origin in the duct. The tumor may be confined to the duct provided the site of the obstruction is near the orifice of the duct. This is the most common variety, and usually the result of neisserian infection. If the obstruction occurs in the duct near its

junction with the gland, the glandular structure may become involved, usually resulting in the total destruction of the glandular tissue. The condition may be bilateral. The patient usually complains of pain, especially aggravated at the menstrual period. The swelling may subside between the periods and gradually grow larger with the repeated distentions. If the patient is subject to sexual intercourse she will usually complain of dyspareunia. The tumors may rupture spontaneously, but usually recur if the cystic sac is not removed. The contents of the cyst may be watery, viscid, purulent, or hæmorrhagic fluid, or any combination of the above fluids.

PATHOLOGY

The wall of the cyst is usually thin, lined with one or more layers of squamous epithelium; some degenerated gland tissue may be found flattened out on one side of the cyst. If the gland itself is cystic the wall will consist of connective tissue and is lined with cylindrical cells. In the case here reported, the cyst was of many years' standing and had a hypertrophied layer of skin over the cyst. The wall was of thickened connective tissue, lined with squamous epithelium and the contents a chocolate colored, viscid, hæmorrhagic fluid.

CASE 1. Female, white, age 32, widow, nullipara. The patient had never suffered from any severe illness, had had no temperature at any time. Ten years ago she was infected with gonorrhœa but did not follow medical advice or treatment. One year following the acute infection, she noted a swelling of the left labium, the size of a walnut. The tumor gave little inconvenience for several years, but the past 3 years has been growing rather rapidly. The patient consulted me because of the mechanical inconvenience of the growth, as it

with skin with quite a marked growth of hair (Fig. 1). On removal of the cyst, large cavernous vessels

¹From the Department of Obstetrics and Gynecology University of Minnesota Medical School

were 10 deaths, totalling 42 resections, with 15 deaths (35.7 per cent). Eight survivals occurred from 3 months to 7½ years. Three patients were living after endogastric operations, 1, 4, and 6 years respectively.

In 1914, Flcbbé was able to collect 157 cases. Those cases based solely on necropsy findings are not included in this paper as they are rather of pathological interest and throw no light on the progress of surgical treatment. I have been able to find in the literature 93 cases of sarcoma of the stomach which came to operation, in addition to 13 unpublished cases at the Mayo Clinic and 1 of my own, making a total of 107 operative cases and a total of 244 authentic cases of primary sarcoma of the stomach. Probably a much larger number has been operated on, reports of which are not now available.

The personal case herewith appended was a leiomyosarcoma. There are two other similar cases in this series and also two cases that are classified as leiomyoma malignum, which for all practical purposes is sarcoma. In fact Balloch, writing on benign tumors of the stomach, quotes Fenwick as follows: "We have not been able to find a single case in the whole literature where a large fibroid tumor of the gastric wall was above suspicion of malignancy."

Sarcoma of the stomach may occur at any age in life. The youngest case was that of Finlayson, a boy of 3½ years and it has been known to occur in a man of 85 (Gosset). Although sarcoma has been thought to be a disease of young life, it more frequently involves the stomach after the fortieth year of life. Of the 107 cases which I was able to collect from the literature, the age was given in 61. The youngest was a boy aged 3½, the oldest a woman aged 74.

AGE INCIDENCE	Cases
Under 10 years	2
Between 10 and 20 years	4
Between 20 and 30 years	3
Between 30 and 40 years	12
Between 40 and 50 years	14
Between 50 and 60 years	12
Between 60 and 70 years	11
Between 70 and 80 years	3

One patient was spoken of as an old man. The sex was given in 66 patients and of these

there were 33 females and 33 males. One case gave a history of symptoms coming on shortly after a fall in which she struck the pit of her stomach. One case came on 2 months after receiving a kick in the abdomen by a mule (McWhorter).

The size of the tumor varies within wide limits from the size of a bird's egg to the case reported by Baldy in which the tumor filled the entire abdomen. From a histological standpoint, the tumor may be any one of several varieties. Round-cell, spindle-cell, mixed-cell, lymphosarcoma, myosarcoma, fibrosarcoma, angiosarcoma, and endothelioma (Clendenning). These tumors are apt to undergo degeneration. They may become cystic from hemorrhage, sometimes calcareous; hyaline and myxomatous changes may also occur. There is some tendency to ulcerate. On the other hand the tumor may show no signs of ulceration but may appear as a smooth or nodular mass. From its gross appearance, the round-cell sarcoma is the type most apt to be mistaken for cancer. It usually infiltrates and most often involves the pyloric end. It rarely produces pyloric stenosis, however, in contradistinction to carcinoma. This type, through infiltration and thickening of the walls of the pyloric portion, sometimes renders the walls of the stomach stiff, depriving the lower half of motility, thereby causing obstructive symptoms. This type of sarcoma seems to be more malignant and to metastasize more rapidly. The spindle-cell sarcoma is apt to be circumscribed and often pedunculated. In its growth it may present itself externally beneath the serosa or internally beneath the mucosa. In the latter instance it may resemble a polyp. These tumors are the type that grow to a very large size. They have been mistaken for an ovarian cyst or a floating kidney, and very readily since in many instances they may produce no gastric symptoms whatever. This type of tumor is slow to metastasize. It is the best type to deal with surgically and offers a far better prognosis than other types. Sarcoma may involve any portion of the stomach, in a few cases the entire stomach was affected. The growth is relatively slow (in one case 3½ years), but may be quite rapid.

malignant degeneration, the patient consulted me for removal of the growth, which at this time had attained the size of a large hen's egg.

Operation. The tumor was resected, local anaesthesia being used. No complications attended the operation or recovery.

LIPOMA OF LABIA

This is one of the rarest of gynecological affections. In Kelly's monograph published in 1906 he was able to collect but 20 cases from scattered literature. To that date he had had but one in his own clinic which was the smallest tumor of the above series measuring 2 by 1.5 by 1 centimeter. The largest was reported by Headley (Melbourne), weighing 24 pounds. Only two labial lipomata have been found in the Mayo clinic in the last 127,000 cases passing through the clinic. J. B. Murphy reports one case in 1916. Goodell, of Philadelphia, reported a case in 1887 which grew from a long, broad pedicle, and extended to the patient's knees.

Sturmdorf reported a case in 1909, in which the tumor had attained the unusual size of 12.5 by 10.5 centimeters in circumference. This patient was in the first stage of labor and the tumor was arresting the progress of the foetal head. The growth was on the left labium majus and delivery was further complicated by an ankylosis of the hip-joint on the right. The tumor was excised and labor successfully terminated. Lipomata of the labia majora present the same characteristics as lipomata elsewhere in the body. They may project from a broad base involving the whole labia, as in Case 3, or the growth may be suspended by a more or less attenuated pedicle, as occurred in Case 4. These tumors may be readily mistaken for cysts, elephantiasis, hernia, varicocele, and fibroma. The tumor may vary in size, from that of a walnut to the 24 pound tumor reported by Headley, depending upon length of time and rapidity of growth. The microscopic pathology is the same as in any lipoma.

CASE 3. Mrs. F. S., age 26, American (one-fourth American Indian), weight 182 pounds. The patient was admitted to the hospital for operation on December 26. The history was negative for fever or other illness. Menstruation began at the age of 11 years and has always been regular and



Fig 2. At left, external view of pedunculated lipoma of the labium majus, at right, cut surface of tumor.

normal. The first pregnancy, at age of 18, terminated at full term. Labor lasted 52 hours and a female child weighing eight and one-half pounds was delivered by forceps. The child died in 1 month, supposedly due to brain injury at delivery. The patient has had two criminal abortions since delivery of her first child. The patient consulted me for a tumor of the left labium, the size and shape of a large banana. She first noticed the tumor 4 years ago but it had grown rapidly the past 2 years. It was not pedunculated nor markedly lobulated. There was also a marked relaxation of the pelvic floor, a result of a laceration at the time of the forceps delivery 8 years previously.

Operation. The lipoma was resected and the pelvic floor repaired. General anaesthesia was employed. Convalescence was uninterrupted.

CASE 4. Mrs. W. O., age 38, American Indian, married and had two grown daughters. Absence of any interpreter made it impossible to secure detailed history. The patient, suffering from incontinence of urine, was sent in to the hospital from the Indian Reservation on February 28, 1918. The external genitalia were normal, except for the pedunculated lipoma springing from the left labium majus. The genital parts and upper thighs were bathed in urinary secretion, rather foul, which had caused a marked dermatitis. Vaginal examination revealed advanced inoperable carcinoma of the pelvic viscera, which had caused two large vesicovaginal fistulae. The patient died in 2 months in the State Hospital, no postmortem report was received.

Operation. The lipoma was ligated with a silk ligature and removed, the pedicle was very small and the tumor symmetrical but lobulated as shown in the photographs Figure 2.

MYXOMA OF LABIA

The tumors in this group are composed of a loose connective tissue with branched cells which are widely separated by a

wall. The tumor must have originally been benign with recent sarcomatous change. However, every palpable mass in the stomach region should rest under the suspicion of malignancy. The rapid development of anæmia and debility, with loss of weight and cachexia, with early, rather severe, and more or less persistent pain in the epigastrium and the absence of any long standing history of dyspepsia, and obstruction (pyloric) is very suggestive of sarcoma. A palpable mass and bloody vomitus together with melæna is all the more suggestive. Vomiting of blood in a young person, with or without severe pain, and a palpable epigastric tumor without obstruction is suggestive of sarcoma. If the tumor mass is large in a middle-aged person and not associated with the usual symptoms of carcinoma of that size, sarcoma should be considered. With the increasing employment of radiography as a routine in stomach disorders, relatively few cases of this condition, as rare as it is, are detected as an anatomic lesion by roentgenologic means, and early will be obtained. The classical but hopeless advanced symptoms formerly enumerated as diagnostic should not be waited for, but early exploration should be invoked.

Mortality. The outcome was given in 64 cases. Twenty patients are recorded as having died, 3 as having recurrence, and 41 patients recovered and were reported well at varying times after operation, the longest cure being a case of Rupert's, a lymphosarcoma, who lived 7 years. Overton's patient is alive 10 years after operation; Krause's patient 7½ years; Kimpton's 5 years and 10 months, and 1 of Mayo's patients was known to be alive 4 years after operation. This patient had a spindle-celled sarcoma. The other 3 were of the round-celled type.

CASE 8140. Miss R. H., age 17, a school girl, came for vomiting of blood and melæna. There was a history of a very copious gastric hæmorrhage occurring over a year ago and lasting a few days. It was arrested for 2 days, then recurred, and was almost fatal. It was preceded by headache for a week.

a lemon was noticed in the apex of the epigastrium. It was palpable for about a month and then it could not be made out again. The melæna returned 2 weeks ago and reappeared 1 week before admission and was associated with weakness but never any pain. She was quite pale and very weak.

X-ray examination showed what appeared to be a perforating ulcer of the lesser curvature about the pylorus. The defect on

favorable for resection.

and became uncontrollable in spite of repeated lavage and continuous proctoclysis, and so forth. By the seventh day vomiting was incessant, prostration was extreme and the general condition critical. The vomiting was so severe that operation was obvious that interference would be very dangerous as her pulse had become very weak, and 140, the patient appeared quite desperate. Seven hundred cubic centimeters of citrated blood were given, her pulse

obstructive that the routine examination for acetone was not ordered. The day after transfusion, acetone was absent. The patient made a complete recovery and is now quite well.

Pathologic report by Dr. Rosson. Miss R. H. Date March 23, 1919. Serial No. 2873. Referred by Dr. Haggard. Source of specimen. Tumor from stomach.

Gross pathologic. Stomach: for a distal curvature soft, nodular, apparently cystic tumor (Fig. 1). The greater portion is dark colored, as though the cystic spaces contained blood. The surface of the tumor also shows adhesions to the serosa of the stomach separate from the main point of attachment.

in the umbilical cord, namely loose connective-tissue cells widely separated by a viscid, opalescent, mucoid substance

LEIOMYOMATA

These tumors, also known as myoma levicellular, are of most simple pathology, growing from smooth muscle fibers and most common in the uterus, ovary, and gastrointestinal tract. Less commonly they occur in the bladder, blood-vessels, skin, and nipples.

Leiomyomata are usually rounded growths, varying in size from minute nodules to solid masses weighing 60 to 70 pounds. They are surrounded by a capsule, which is well defined and more or less hard. In whatever location, they spring from pre-existing unstriated muscle fibers. Microscopically, we find bundles of muscle cells running in different directions. Cut longitudinally they show cylindrical nuclei as the most conspicuous feature. Lying between the muscle cells are collagen and so-called myoglia fibrils. The latter appear as coarse lines along the sides of the cells. Usually some fibrous cells are found in these tumors. The tumor herein pictured evidently arose from some small unstriated muscle fibers of the duct of Bartholin, and is of interest only from its location.

Stevens reports a case of rhabdomyoma (striated muscle tumor) of the vulva. The diagnosis might be questioned, however, as Johnson, Bland Sutton, and others contend that a tumor composed entirely of transversely striated muscular tissue has not yet been described, and it is probable that certain elongated and transversely striated cells occasionally met with are not really muscle fibers. Striated muscle fibers are, however, sometimes present in mixed tumors of the kidney and the testicle, occurring in early life.

CASE 6. Mrs. W., age 36; weight 200 pounds; born in Roumania; married 8 years, and has had no pregnancy by present wedlock. She claims never to have been pregnant, but marked laceration of the cervix uteri and of the pelvic floor suggests an early pregnancy, doubtless out of wedlock. The history is negative for fevers or illness. The chief complaint is a profuse vaginal discharge. She was treated locally for several weeks for the leucorrhœa, which resisted all efforts to relieve it. The tumor of the right labium minus was noted and diagnosed

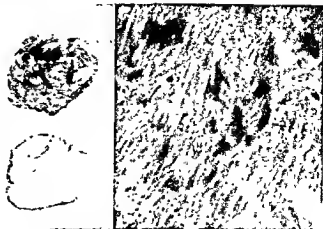


Fig. 4. At left, leiomyoma of labium, removed from Case 6, at right, photomicrograph of same specimen

a cyst of the Bartholin gland and naturally considered of neisserian origin as also was the cervicitis and endometritis. The patient was curetted and the tumor of the labium removed (Fig. 4).

Pathology. Microscopic findings revealed a cystic hypertrophic endometritis and a leiomyoma of the labium. The tumor doubtless originated from the unstriated muscle fibers of the duct of Bartholin. Microscopically one notes bundles of muscle cells running in different directions. The cells cut longitudinally show cylindrical nuclei as the most conspicuous feature. Proper staining may show a substance known as collagen and myoglia fibrils, the latter appearing as coarse lines along the sides of the cell.

Proper and Simpson, of the pathological laboratory of the New York State Institute for the Study of Malignant Diseases, reports that malignant leiomyomata are not uncommon and may be defined as malignant neoplasms arising from mesoblastic cells of the smooth muscle type. It is conceivable that these tumors may originate from either adult, smooth muscle cells or from benign tumor cells as found in leiomyomata. The latter origin must be considered as the common one on account of the frequency with which a history of "degenerating fibroid" (1) accompanies these tumors.

Virchow, in his treatise on tumors, described in 1863 a myoma of the stomach which underwent a metaplasia to myosarcoma. While he speaks about its originating in the interstitial tissues, still his microscopic description of the cells and especially the nuclei leads one to believe that he had to deal with a true malignant leiomyoma to which he gave

ington, as personal communications) and 1 additional case each by McWhorter, Pagenstecher, Basch and the writer, making a total of 107 patients operated on. Pagenstecher's case was referred to by Douglas as a necropsy, but it appears that an exploratory laparotomy had been done 12 days before death. Of the 107 cases, 80 had partial gastrectomies or resections of the tumor and part of the stomach wall. Twenty-seven had explorations or gastro-enterostomies. Of 58 partial gastrectomies 15 died, a mortality of 25 per cent. Of 10 exploratory operations 8 died in the hospital; 1 was reported to be in poor health after 4 months, and the remaining 1 was not heard from after 2 months.

The 13 cases of sarcoma of the stomach operated on at the Mayo Clinic between 1908 and August, 1920, are herewith briefly abstracted.

CASE 18165. Woman, age 38, had noted an abdominal tumor for the past 3 years. She had nausea and lack of appetite with gaseous eructations for 2 months. She had 3 1-day periods of gastric pain. At operation a tumor 20 centimeters in diameter was found arising from the greater curvature of the stomach. Partial gastrectomy was done and the patient made a good operative recovery. Diagnosis: fibrosarcoma. Patient died 6 months after operation.

CASE 53972. Man, age 62, during a period of 4 years had three attacks of pressure and pain in the epigastrium. Nine months previous to examination he had a 3-days' attack of nausea and vomiting.

Immediate recovery was good but when last heard from, 4 months after operation, he was in poor con-

dition involving the greater curvature and also the transverse colon. The origin of the tumor was doubtful. Partial resection of the stomach was done and the patient made a good recovery. Four years later he reported as well. Diagnosis: spindle cell sarcoma.

CASE 182060. Boy, age 16, for 4 months has had continuous pain in the left side with indigestion and gas an hour after eating. At operation a tumor was found on the posterior wall of the stomach. The tumor was excised. The patient made a good recovery, but has not been heard from since. Diagnosis: lymphosarcoma.

CASE 188936. Man, age 62, for 6 months has had an occasional pain in the epigastrium. Exploration was made for diagnosis and a lesion was found involving the lesser curvature and pyloric end of the stomach. Partial gastrectomy was performed. The patient made a good operative recovery, but has not been heard from since 2 months after operation.

At operation the posterior wall of the stomach was involved, and a Polya resection was done. Good operative recovery. Diagnosis: myosarcoma.

CASE 205800. Man, age 53, for 30 years has had bloating and indigestion with an exacerbation for 3 weeks previous to examination. No tumor was made out on examination. The pylorus was found to be involved at operation and an anterior Polya resection was done. Good operative recovery, but patient died at the end of 4 months. Diagnosis: lymphosarcoma.

CASE 265434. Man, age 42, for 4 months has had epigastric distress with gas eructations and slight vomiting. At operation the lesser curvature was

involved. He had noticed an abdominal tumor for 1 year. Through the abdominal wall the tumor felt very much like a spleen. At operation the tumor was found originating from the lesser curvature. Partial gastrectomy was done. The patient reported well 9 months after operation. Diagnosis: mixed-cell sarcoma.

CASE 309588. Woman, age 40, had noticed an abdominal tumor for 1 year. For 7 months she has had attacks of abdominal pain, nausea and vomiting, but never any blood in vomitus. A tumor was found involving the pylorus. A partial gastrectomy was performed. The patient made an immediate

recovery and the posterior wall of the stomach. A partial gastrectomy was performed. The patient died 7 days after operation. Diagnosis: lymphosarcoma.

CASE 190100. Man, age 46, complained of pain in the chest with periodic distress in the stomach and occasional vomiting. He had lost 20 pounds. A lesion was found involving the lesser curvature.

The patient had after meals. The lesser curvature was involved. A partial gastrectomy was performed. Recovery. Diagnosis: lymphosarcoma.

CHOLECYSTGASTROSTOMY

By CHARLES S. WHITE, M.D., F.A.C.S., WASHINGTON

CHOLECYSTGASTROSTOMY or anastomosis between the gall-bladder and the stomach, has a limited application in surgery but on these rare occasions when it may be employed, it is an operation which may be depended upon to relieve a very serious situation for the patient and at the same time prove a simple solution for a complex problem for the operator.

It appears from a brief survey of the literature that in 1887, Oddi experimentally demonstrated in dogs that after ligation of the common bile-duct, an anastomosis between the gall-bladder and the stomach not only failed to interfere with digestion, but all the animals gained in weight. Masse confirmed this work in 1898. In 1892, Wickhoff and Anfelberger jointly recorded the first successful operation of this character in a patient who was suffering from a disease of the pancreas and gall-stones. Up to 1900 few cases were reported, but more recently Kehr, Moynihan, Mayo-Robson, and the Mayos have made mention of this operation in their writings.

A small number of cases coming to operation with the tentative diagnosis of obstruction of the common duct by stone, fail to disclose a concretion when explored, either because no calculus is present or the operator is unable to find a stone that is present. Stricture of the duct, pressure from a growth in the pancreas or the immediate vicinity of the duct, or an enlarged gland may be the underlying cause of the obstruction, and the external drainage of the gall-bladder not only fails to relieve the condition, but dooms the patient to a biliary fistula and inanition. It is by no means easy to open the duct and determine absolutely by a probe if the duct is patulous, although in most cases it should be attempted. Should we be dealing with a stenosis of the duct, aside from plastic surgery on the common bile-duct we have a choice of three operations to meet the indication: cholecystenterostomy, cholecystocolostomy, and cholecystgastrostomy. The

second operation, linking up the gall-bladder with the colon, deprives the patient of his bile where it is most needed and results in feeble digestion. Cholecystduodenostomy ordinarily is the operation of choice, but with a fixed duodenum, the operation presents many difficulties. A perfect union is necessary and a failure results in a duodenal fistula, an abomination to the patient and his physician. In some cases the juxtaposition of the stomach to the gall-bladder renders the anastomosis between the organs not only possible, but easy, without the attending fear of a permanent fistula, for the thick walls of the stomach permit a secure union, and a leak is rarely followed by a persistent fistula.

The operation has been found useful in some forms of cirrhosis of the liver, a condition which can be conveniently and logically divided into two types—portal and biliary—and which may also be distinguished clinically and pathologically. In the former condition, cholecystgastrostomy offers no relief.

Biliary cirrhosis or biliary obstructive cirrhosis as designated by Adami, is stated by Ford to be due to one of the following conditions:

1. Congenital deformity or obliteration of the larger gall-ducts;
 2. Gall-stones, or more frequently, by contraction of scar tissue which has developed about an ulceration caused by the passage of a sharp gall-stone;
 3. Cancer of the head of the pancreas,
 4. Enlarged glands at the hilum of the liver.
- To this may be added, ascending infection, chiefly from the gall-bladder. This is perhaps the most frequent cause, either alone or in combination with the other enumerated causes. It is in obstructive biliary cirrhosis of the chronic type, that cholecystgastrostomy has its chief indication. While the disease is not common, it is by no means rare, and its infrequent recognition is in a large part due to the arbitrary classification and study of hepatic cirrhosis.

A STUDY OF PERSISTENT BONE SINUSES

OBSERVATIONS FROM 500 CASES FOLLOWING GUNSHOT WOUNDS¹BY CHARLES WILLIAM PEABODY, A.B., M.D., BOSTON
Captain, M.R.C., U.S.A., First Lieutenant (Hon.), R.A.M.C.

MANY of us who for any considerable time were engaged in clinical work while in service were privileged to have observation over numbers of cases so large as compared with civil work as to warrant conclusions of a very definite nature. There is a tendency to forget these or to stow them away in the back of the mind as belonging to a chapter now closed. It is true that certain of the problems we met are now only of academic interest or were of a peculiarly unusual nature, such as the gas bacillus infections in France; but there are many others such as the treatment of joint injuries and the experiences with the epidemics in the cantonments that have direct and valuable application in civil work today, and we ought to utilize and spread the information thus gained.

The subject which the writer has assumed of sufficient interest to present lies somewhere between the two extremes of value mentioned. As a title the term "persistent bone infections" has been used. A still better definition would be "bone fistulae." There are several reasons for avoiding the word osteomyelitis, a sufficient one being that the splendid study of its pathology accomplished by Nichols and the able work of Simmons, Homans, and others on its clinical aspect and surgical treatment make it presumptuous of me to attempt to add to the subject. That suppurative osteomyelitis of civil work is still a discouraging surgical problem is apparent from the fact that the literature is still full of new suggestions for treatment, and therefore more skepticism than interest would be expected at an attempt to add to them. But the observations to be made here concern a process which, as Chutro (1) has pointed out, is inaccurately defined by the term osteomyelitis, as the marrow is rarely involved and as it is essentially an *osteitis*, low grade but of such a stubborn character that any success

in treating it may carry some lessons for other uses. With the increasing number of industrial accidents, compound fractures which have become septic and under indifferent treatment have maintained a persistent unhealed course may be referred to our larger centers for definitive treatment. Such chronic cases might well be comparable to those to be described and respond in a similar manner to the treatment evolved. Whether ordinary subacute osteomyelitis of hæmatogenous origin can be so approached is an exceedingly interesting question. These lesions are not well walled off and the dangers from systemic absorption following radical treatment are greater. Then, too, the fact that the disease is most frequent in early adolescence before full bony growth is attained certainly urges conservative methods. But, on the other hand, the tendency of many to persistent chronic course with toxic degeneration and amyloid disease would warrant accepting certain definite risks to terminate the process.

During the 12 months subsequent to the armistice, about 500 cases of persistent unhealed bony lesions passed under the writer's observation, and in the last part of this period I was privileged to have control of the operative and after-treatment of all such cases received. About 250 of these were operated upon by the writer or under his direction, and it was possible to follow through to healing an equal number. But as the work was done under trying circumstances, one hospital after another being suddenly abandoned, illustrative and statistical evidence which now would be invaluable could not be preserved. Therefore, this cannot be a strictly scientific presentation; the experiences, methods and conclusions are offered for what they may be worth. The three hospitals concerned were successively Base Hospital, Camp Devens; No. 10 General Hospital and

¹ Read before the Clinical Society of the Massachusetts General Hospital, January 27, 1920.

contained many small stones. The other organs appeared normal. An anastomosis with the stomach was done by means of a small Murphy button rather than a suture, owing to the difficulty in approximating the gall-bladder and stomach, and the necessity for haste.

The first bowel movement following the operation was dark brown. The wound healed well and he was able to leave the hospital in 20 days. At the time he was discharged his stools were deeply colored with bile and his skin had lost the bronze hue but was still distinctly icteroid.

Dr. Groover reports the result of X-ray study, February 17, 1920:

"The Murphy button is in relation with the pyloric end of the stomach. It is probably where it was originally placed. There is very definite tenderness directly over the button."

A gastric analysis made by Dr. Clark, February 18, 1920, was as follows:

"A moderate amount of fresh golden bile, free hydrochloric acid 26, total acidity 36," with the additional comment that the gastric juice was not abnormal and was capable of good digestion. The patient weighs 40 pounds more than his last weight prior to operation and states that his health is good. The jaundice has completely disappeared.

We believe this to be a case of chronic obstructive jaundice, due to an ascending infection from the gall-bladder. The cause of the gall-bladder infection is not clear, but prior to his illness his teeth were the source of an infection that required the services of a dentist for some months. It is very possible that this was the exciting cause.

CASE 2. H. B., male, age 40, bank clerk by occupation. His parents are living and are in good health. He has had the usual diseases of childhood, but no protracted illness. He uses stimulants occasionally.

He dates his present illness from August, 1918, and first complained of pains in the epigastrium. These pains were at times severe but infrequent. He began losing weight in the autumn of 1918 and about January 1, 1919, the epigastric pains returned with shorter periods of relief between the attacks. During the early part of this month, he consulted his physician to whom he gave a history of luetic infection of about 10 years' standing. The blood and spinal fluid Wassermann reaction tests were positive. From January 13 to February 25, he received eight doses of salvarsan intravenously. During this period the attacks of pain radiating to the back were getting closer together, and morphine was necessary for relief. The pain was sudden and violent. About March 1, icterus became a symptom and it gradually deepened until he became lemon hued. The stools contained no bile. The urine contained bile but no sugar or albumin.

We saw this patient in consultation with Henry Schreiber March 27, 1919, and he was operated upon the following day. The only gross pathological findings was an induration in the head of the pancreas. The gall-bladder was not visibly diseased and the liver was not enlarged. An anastomosis by suture between the stomach and gall-bladder was made. The patient stood the operation well and stated he felt better the following day. The movements after the operation contained bile and in a few days the jaundice began to fade. His convalescence was rapid and satisfactory in every particular.

A fractional gastric analysis made by Verbruycke, February 18, 1920, showed that the contents when first removed were greenish yellow, contained some mucus, a trace of bile, a trace of blood, free hydrochloric acid 22, total acidity 33. The greatest hydrochloric acid curve was 75, 1½ hours after the test meal was withdrawn and at that time the total acidity was 94. This remark is added. "The bile at this time is evidently going through the common bile duct and not through the new opening." At this date, the Wassermann is negative, and the patient has gained 35 pounds in weight.

The cause of obstruction in this case we believe was due to a gumma in the head of the pancreas.

CASE 3. A. McL., female, single, age 26, a clerk by occupation. The family history is of no importance. She had diphtheria during childhood. At the age of 14 she was ill 2 months following an injury to her left side, and shortly thereafter developed a tumor under the left costal border which persisted and enlarged slowly and is still present, a hydronephrosis we believe. At the age of 17 she had jaundice 3 weeks, with some pain in the upper right quadrant of the abdomen. In July, 1919, she com-

ated to the right shoulder and penetrated to the back, and was attended with fever. The stools were colorless.

She was seen in consultation with Dr. Bradley August 27, 1920, and was operated upon the following day.

bladder, a
and pus
at once, and at the end of 8 days the drainage tube was removed, but the bile continued to flow freely for about 2 weeks, when the sinus healed. A little bile appeared in the stools at intervals. Shortly after the sinus closed, she was seized with severe which was relieved in the wound. The while the bile was draining, but deepened when the sinus closed. There was a repetition of the damming and rupture of the sinus 2 weeks later. A second operation was done



Fig 3 Large sequestrum in cavity in tibia. Rarefaction around smaller shrapnel fragment imbedded in bone. Larger one in soft parts not involved in process.



Fig 4 Taken after cavity had been cleaned out in conservative operation. Patient was received by the writer 4 months later and showed an almost identical X-ray picture. Surface wound still existed opening into large granulating cavity, fairly clean but showing no tendency to fill in.

Fig 5 Postoperative picture showing apparently perfect result in a lower femur lesion. The wound sterilized satisfactorily but was allowed to granulate in of itself. Before cicatrization was complete the patient was transferred, became re-infected, and was operated upon two months later by the writer for further sequestrum formation. This time complete healing was secured before evacuation.

catgut, starch and iodoform, and bone chips; and non-absorbable, gypsum, copper-amalgam, gutta serena, various cements and bismuth paste (Beck). That these would be only occasionally successful would seem probable from the evident combination of a foreign body plus infection. Mosetig-Moorhof, in 1903, evolved an exceedingly complicated technique for the injection of a mixture of iodoform, spermaceti, and sesame oil, which would be gradually absorbed. Experimental work on dogs by Silbermach (5) bore out the theory of absorption, but the iodoform content militated against its use in large quantities. Twenty years ago Watson-Cheyne introduced the theory of the obliteration of cavities by the absorption and replacement of blood-clot (6), and advocated its use for such purpose, but the susceptibility of blood clot to infection precluded its use with such attendant complication. Bone-wax as a plugging material following cauterization with pure carbolic acid has been advocated by

Cotton (7), but he found its application limited to conditions strictly comparable to a dental cavity with no soft parts involved. Fat, used by Neuber, for filling defects in soft parts, in 1893, was first used in bone by Chaput in 1903. Makas (8) in 1912, and Calforio (9), in 1918, showed that in dogs it was followed by bone regeneration. Rutherford Morison has presented war cases show-

by impregnation with his "bipp" and closure in one sitting. His technique has not produced the same results in the hands of others and has aroused a great deal of adverse criticism.

Approach to this problem, by conversion of the cavity into an open gutter, has been advocated by Broca, by Sargent (4), by White (10) and by Chalker (11). The method

Veterinarians have observed that if a false corpus luteum remains unabsorbed in either ovary of a cow, she does not come in heat, and so long as she does not come in heat, she of course does not conceive. On the other hand, as soon as this false corpus luteum is absorbed normally or expressed manually by the operating hand of the veterinarian, the phenomenon known as heat invariably develops within 48 to 120 hours and with suitable environment impregnation occurs. This observation has been made so many times by a sufficient number of highly trained, observing, experienced veterinarians, that in the minds of these men, this is no longer a debatable question.

Under normal conditions when there is no opportunity for impregnation, the period of heat in the cow recurs every 21 days and the false corpus luteum is absorbed in about 3 weeks. This last statement is based on the observations of veterinarians, who ordinarily find the ovary, from which the last ripe ovum has escaped, to assume about the normal size at the end of 2 weeks so that by the time the next cycle begins the false corpus luteum has become entirely absorbed. Under abnormal pelvic conditions in the cow, the absorption of the false corpus luteum may be delayed for weeks and even months. The abnormal conditions which seem to prevent the absorption of the corpus luteum, are usually pelvic abscesses, salpingitis, and endometritis, due to an infection caused by the bacillus of Bang. That this is a fact is evidenced by the following: cows suffering from these pathological conditions, due to this infection, often do not come in heat for months and in such cases an examination practically always discloses an unabsorbed corpus luteum in one of the ovaries. If this corpus luteum is manually expressed, the cow invariably comes in heat within 48 to 120 hours, the first requisite to possible impregnation. The possibility to impregnation now, however, depends upon the severity of the pathological changes and the acuteness of the infection. If the infection is relieved, impregnation will take place in the large majority of these cows.

Dr. R. N. Gordon Darby, formerly of Barrington, Illinois, and now of Hackettstown,

New Jersey, several years ago took charge of a herd of one hundred high grade Holstein cows, the average value of which was about \$400.00 per head. The year before he took charge of this herd only 14 viable calves were produced on this farm. Most of the cows were sterile, a large percentage of them did not come in heat at all, and the others did not conceive, some of them having been bred more than a dozen times without resulting pregnancy. Nearly all of them were infected with the bacillus of Bang and those that did not come in heat had unabsorbed corpus lutea. After the pelvic infection and endometritis had been relieved by irrigating the uterus and vagina with large quantities of Lugol's solution, those that did come in heat quite readily conceived as did also those with unabsorbed false corpus luteum immediately after the corpus luteum had been expressed. The first year following this line of treatment, the number of calves produced on this farm had risen considerably and the second year when the benefits of this dual treatment became fully effective the number of viable calves this herd produced was 86.

Pelvic infections have long been recognized as the cause of sterility in the human female and every operating surgeon with large experience could report many cases where the relief of pelvic infection has made conception possible. I have had a considerable number of patients with premature menopause, who gave the history of having suddenly stopped menstruating because of a severe chilling during menstrual period and who have never menstruated since, and another considerable number of patients, who, following a chilling or a severe illness during a menstrual period, menstruated only at intervals varying from several months to several years, who suffered from the distressing symptoms of artificial menopause. In view of the above experience on the cow, I would today laparotomize such patients, carefully examine the ovaries, and if an unabsorbed corpus luteum were found, excise the same with the hope of relieving the symptoms, re-establishing menstruation, and curing the sterility.

The following case is presented as possibly belonging to this class.

inco-ordinated methods of treatment and the dangers of repeated evacuation of compound fractures while still in the unhealed state. Many gave a story of operation with excellent subsequent progress, rapid contracture of the wound and diminution of the discharge followed by transportation and consequent local flare-up with prolonged fever, sepsis and emergency drainage operation, and this course often had been many times repeated. The number of previous operations directed at the bony focus in no case was less than two and in many as great as 8 or 10. Postoperative treatment included the use of every known antiseptic. Dakin's solution accompanied by an alleged Carrel technique had been tried at least once in every case. It was interesting to note the rather canny appreciation of methods of surgical after-care acquired by the more intelligent patients, and their observations on the variety of application of common methods.

PATHOLOGY AND ETIOLOGY

The most striking fact about the pathology of these lesions was the large size of the callus produced. It varied somewhat with the degree of comminution and displacement, and often had a diameter three times that of the original shaft. There was in addition extensive dense cicatrices of the soft parts from the original and operative wounds down to the callus, and one or more draining sinuses. The functional disturbance was necessarily great and steadily increasing, muscles being tied down and joints stiffened by disuse or by the progressive muscular fibrosis. Where joints were movable, attempts at functional improvement or increased motion were almost always followed by a local flare-up at the site of infection.

An anatomical arrangement of the varieties of fractures shows two groups with two types in each. Taking the fractures of the diaphysis as the first group, we found a considerable number with a fracture more or less transverse, in fair alignment, a small callus of great density, an advanced degree of osteosclerosis of the neighboring shaft obliterating the medullary cavity in either fragment, and a sinus leading to a small chamber in the center,

containing a sequestrum less frequently than the second group, but perpetuated rather by the inability of the sclerosed walls to generate any healthy tissue, bony or granular. The more common type in this group presented a break spiral and comminuted with some degree of overriding or mal-position. This was held together by a huge callus, osteofibrous or spongy with fungosities, containing multiple chambers with continually reforming sequestra, following their disintegration and discharge in small pieces through the sinus. The sequestra were frequently very large, several inches long, forming a long fissure in the shaft, or originating from fragments of the shaft which had been left *in situ* at the first operation. The function of these original, partly detached fragments as an etiological factor in the disease will be referred to later. Another constant observation was the tendency to absorption and necrosis with sequestration of the projecting pointed ends of the shaft where alignment was poor.

The second group included the lesions of the epiphysis, and for its first type had fractures not extending into the joint. This type showed very little bone reaction or new bone production, and a tendency to rarefaction and degeneration of the whole epiphysis, which became spongy and fungoid, containing many small soft sequestra. The other type differed principally in having a persistent communication with the joint, which although ankylosed, seldom had progressed to complete destruction of the cartilage, a necrotic remnant remaining to perpetuate the sinus and the infectious process. This peculiarity of cartilage to persistent necrosis until its total extent is destroyed or removed was observed also in infection of the costal cartilages. The joint cases referred to were the most stubborn and recurrent type met and required the most radical operative treatment for a cure.

Persistent sinuses in the presence of non-union made up a very small group. These few showed a very soft fibrous callus, a tendency to mushrooming of the bone ends, necrosis and suppuration often extending into the marrow cavity with attendant severe septic complications. A definite relative increase in the amount of atrophy and degenera-

one week after last menstruation, mass to left of uterus about size of a lemon, painful and tender. Low median laparotomy, appendix embedded in adhesions, removed. Left tube and ovary make a mass about the size of a small lemon, firmly adherent to cul-de-sac. Adhesions loosened, left ovary and tube removed. Patient menstruated 30 hours after operation.

CASE 8. Mrs. M. S., age 23. Menstruation at 17, then no period for about a year. Then menstruated almost continuously for 2 years when she had a laparotomy, removal of left ovary, tumor of uterus and appendix. Well for about two years, then had a sudden profuse vaginal discharge which has kept up ever since. Had another laparotomy 6 months ago when she was informed there was an abscess of the ovary and the uterus fastened up. No relief since, constant pain in right side and back, occasional sick headaches. One abortion 3 years ago, no other pregnancies. Tongue clean, heart and lungs normal, perineum intact, cervix normal, uterus in normal position, freely movable, to right of uterus a fluctuating mass about the size of a small orange. Median incision through former scars. Adhesions of omentum to former abdominal incisions loosened, tears and omentum repaired. Fluctuating tumor about the size of a small orange to the right of the uterus and adherent to it. Apparently a degenerated cystic ovary, removed without rupturing it. Both tubes and left ovary removed at former operations, as was also appendix. Adhesions of appendices epiploicæ loosened and ligated. Wound closed. Patient of 28-day type, regular, last menstruation began 10 days before operation, flow continued for 3 days, began to menstruate again 12 hours after operation. Has not menstruated since, operation being performed on October 1. Examination December 1, result apparently perfect, patient informed states that she had not felt so well in years.

CASE 9. Mrs. A. J. Patient sent to hospital by family physician on November 8 with diagnosis of acute perforated appendix. On bimanual examination a fluctuating mass found to right of uterus and in lower quadrant of abdomen, irregular, lobulated, tense, size of a large orange. Moderate pyrexia, nausea, severe pain. Three days later low median incision, fluctuating lobular tumor of right tube and ovary, each about the size of a lemon. Left ovary and appendix had been excised at a previous operation. Uterus adherent far down in pelvis, adhesions loosened, right tube and ovary removed without rupturing. Temporary ventrosuspension of uterus. Patient regular 28-day type; her last menstruation had begun 15 days before the operation and ended 9 days before the operation. Began to menstruate 30 hours after the operation. Left hospital on the eighteenth day. Wound completely healed, pelvis negative, and general condition excellent.

Just why these two last women should have a typical menstrual flow after the removal of their last remaining ovary can, it seems to me,

be explained only on the supposition that in each instance the remaining ovary contained a false corpus luteum and that its removal brought on the menstrual period.

Ordinarily the true corpus luteum is retained in the ovary of the cow from 30 to 70 days after parturition. This statement is based upon the following facts: first, usually the cow does not come in heat for this period after calving; second, the true corpus luteum can be felt by the operating veterinarian on examination for approximately this length of time, and finally, when this true corpus luteum is expressed, the cow will invariably come in heat within 48 to 120 hours. This fact is made use of by veterinarians to get valuable cows to produce a larger number of calves. In this way, a valuable cow can be made to produce a calf every 42 to 44 weeks instead of every 52 weeks, an increase of fecundity of about 20 per cent, which in a cow whose offsprings vary in value from \$10,000 to \$100,000, is quite an item.

The absorption of the true corpus luteum is delayed in the presence of lactation. Every bright country lad knows that cows that are suckling their calves do not come in heat as quickly as those which are milked and that some cows, as well as mares, will not breed at all while running with their young. This observation is corroborative of the common belief among women that nursing prevents pregnancy in a considerable portion of cases.

Veterinary surgeons have also made another very important discovery. Sometimes in expressing what they considered a false corpus luteum they have actually expressed or ruptured a true corpus luteum, in which instance one of two things has invariably happened, either the cow has bled to death in a very short time or she has aborted within from 24 to 36 hours. This observation on the cow throws very interesting light on the problem of abortion. This experience by veterinary surgeons, as well as my own experience in operating on pregnant women, leads me to believe that abortions following abdominal traumas are caused by injuries to the true corpus luteum and not to traumatism of the uterus itself and that in operating upon a pregnant woman the important precaution

negative plates could not be taken as final and had to be interpreted in connection with clinical findings, extensive sclerosis often made difficult the X-ray demonstration of deep-seated cavities. Assistance was sometimes obtained from plates made with a Carrel tube or a small rubber catheter worked into the end of the sinus. This procedure was usually more valuable than the introduction of a silver probe or of an opaque paste.

METHODS OF TREATMENT

Before being privileged to take charge of the treatment of all cases of unhealed wounds at General Hospital 30, the writer was associated with the work on this problem in several other hospitals, where it was possible to observe the results of various other methods, with a large number of these earlier patients also later coming under the writer's charge, and about half of the cases upon which these observations are based were seen in this earlier period.

Many different methods of operative and postoperative treatment were used with varying results. Simple curettage of the tract and packing with gauze gave even more unsatis-

followed by instillation of Dakin's fluid brought a rapid cleaning up of the discharge and filling in of the wound in the soft parts, but the bony cavity with a narrow tract leading into it persisted indefinitely in spite of the antiseptic treatment, and as soon as this was discontinued suppuration recurred. Staining of the affected tissues by injections of methylene blue followed by radical débridement operation was also attempted; when these were closed by immediate suture a dangerously septic wound resulted with inevitable restoration of the bony pathology; when the wound was left open the septic reaction was much less and the wound soon appeared to be granulating cleanly, but later an area of exposed bone would invariably be discovered or unhealthy granulations covering a low grade but persistent bone infection. The antiseptics of every-day use and dichloramine-T also were less useful as post-

operative aids than Dakin's solution, but for good results with the latter exact Carrel technique was found essential. The best results in healing up these bone fistulae were observed at the hands of Cotton and Rice, of Boston, who practiced a fairly extensive cleaning out operation followed by careful Carrel-Dakin sterilization. They were able to get complete cicatrization in a majority of their cases, the time required being from 4 to 8 weeks. Clinical sterilization of the wound was rarely obtained, however, until cicatrization was nearly complete, and for this reason secondary suture was seldom practiced. The necessity of rapid sterilization and prompt closure of the wound was impressed on the writer on receiving many promising cases of their series that had relapsed with recurring bone sinuses. But even with their careful methods a number of the deep seated bony lesions failed to clear up satisfactorily. However, these methods gave the best results observed, and the writer's technique was based on these principles with the modification of a more extensive revision operation removing every possibility of cavity formation and allowing rapid sterilization with early closure. The other contributing factors permitting more satisfactory results from the eventual technique consist probably in a number of minor details referred to below, which altogether were found to have a very considerable effect on the ultimate cure.

DETAILS OF AUTHOR'S TECHNIQUE

Lessons from a rather extensive operative experience led to the adoption of certain pre-operative measures as an essential part of the routine. Sinuses were dilated, under gas if necessary, adequate tube drainage secured, and mechanical cleansing of the tract by daily irrigations for several days prior to operation. If the patient had shown a recent flare-up with fever, poultices were applied. In the face of an extensive operation often unavoidably opening up unprotected fields, this preliminary treatment was found highly important in preventing severe septic post-operative reactions. Where there had been extensive cellulitis or lymphangitis, the bacterial flora was examined and a streptococcus infection met by preliminary drainage opera-

extra-uterine pregnancy neither the foetus nor placental tissue can be found on the most careful search. My own experience has been along the lines of these articles. In two such cases in which I made a pre-operation diagnosis of extra-uterine pregnancy I was unable to find anything wrong with either of the tubes in spite of the fact that there was a moderate amount of free blood in the pelvis. I believe now that if I had examined the ovaries more critically I would have found a ruptured false corpus luteum in each case. A number of such observations has actually been made by other operators and I believe that ruptured false corpus luteum with pelvic hæmorrhage and irregular menstruation is much more common and that true, ruptured, extra-uterine pregnancy is less common than heretofore supposed.

The observations of veterinarians on the cow are corroborative in certain respects of the work done by Fraenkel¹ on the rabbit but much more convincing as shedding light

¹ Lippmann's *Handbuch der Frauenheilkunde*, 1914, vol. iii.

on the same problem in the human female because made on a much larger number of cases and on an animal species that has as a rule single, instead of multiple, foetations and a period of gestations almost identical with that of the human species.

CONCLUSIONS

I believe the above data justify tentatively at least, the following conclusions:

1. That an unabsorbed false corpus luteum prevents ovulation and is a common cause of sterility and that the expression or excision of such a false corpus luteum invariably brings on menstruation.
2. That the excision or rupture of a true corpus luteum invariably results in interruption of pregnancy, at least during the early months of pregnancy, and that it may be looked upon as a common cause of abortion.
3. That an injury to either the true or false corpus luteum may simulate ruptured extra-uterine pregnancy.

PREGNANCY IN A RUDIMENTARY HORN OF THE UTERUS

By O PAUL HUMPSTONE, M.D., F.A.C.S., BROOKLYN

ANY cases of pregnancy in double uteri are delivered without surgical interference. In fact only one type of developmental deformity of the uterus is of serious clinical importance to the obstetric surgeon.

Pregnancy occurring in a uterus bicornis unilateral rudimentarius becomes as tragic an accident as can happen to a woman. It would seem, in the light of this fact, that it might be well to refresh our minds as to the occurrence of this predicament, with the hope of more accurate diagnosis and rational treatment.

Embryonal study shows this abnormality to be caused by an initial lack of development during foetal life of the middle and lower parts of one of the müllerian ducts, with a consequent failure of the two ducts to coalesce, the effect being, to produce a small appendage of uterine tissue connected by a band of fibro-

muscular tissue, "generally about 1 centimeter in breadth and 3 to 7 centimeters long" (1), to the lower or middle part of the body of a well developed uterus. In a few of the cases a very small canal communicates between the appendage and the uterine body, through the fibromuscular band. In the others, the only opening into the rudimentary horn is through its fallopian tube, which is regularly well developed. The round ligament is attached to the anterior and superior surface of the accessory uterine tissue. It has been observed that this deformity is more likely on the right side than the left, but no known explanation for this has been offered. The well developed uterus is perceptibly displaced from the median line toward its own side of the pelvis. Certain irregularities in the menstrual function are noted in this malformation, but bear no relation to the

that the dry field makes possible neater and more accurate work, on the other hand, the operation is rarely a brief one and the prolonged ischæmia distinctly lowers the resistance of the muscles to the spread of infection from the septic field. Furthermore, the application of a tourniquet even for a brief time is followed by the relaxation and dilation of the entire arterial system distal to that point; this vascular stasis and hyperæmia persists for some time after removal of the constriction, and a tremendous oozing and often considerable hæmorrhage occurs in the wound hours after operation. The well known problem of the "wet stump" illustrates the difficulty in dealing with this condition, and that removing the tourniquet before the end of the operation is not sufficient. In addition the oozing forms a serious obstacle to the prophylactic use of Dakin's solution as will be shown below. As patience and experience make it possible to overcome the handicap of a wet field, this difficulty should certainly be faced.

In the technique of the writer, the sinus and a small amount of surrounding scar tissue was first excised *en bloc*. The extent of the bone cavity thus exposed was determined, sequestra removed, and the area well cleaned out. So far no normal tissue has been exposed and all the grossly infected material has been removed. The extent of the revision procedure having been determined upon, linen and instruments are changed, and a long incision is made well beyond the furthest limits of the bony cavity. The old scars were usually very extensive, and the writer preferred not to remove them completely until the closure operation, rather keeping within their limits, but excising enough to leave the wound gaping. The incision is carried down to and through the periosteum, the latter being then reflected and the overlying tissues retracted *en masse*, great care being taken to avoid opening into them beyond the protecting wall of scar. The importance of this small detail cannot be too strongly emphasized, as neglect of it has always been followed by cellulitis, prolonged suppuration and sloughing, and frequent reinfection of the exposed bone. With an osteotome the bone not only

overlying the cavity but also completely surrounding it is removed. This must be extensive and loss of continuity must be accepted if necessary, although the large callus usually makes this avoidable. Tunnels must be converted into gutters with sloping walls, "well" or bottle-shaped cavities into shallow basins. The excision must continue not only until all necrotic bone has been removed, but also until healthy bleeding bone is reached. The dense sclerotic bone surrounding these cavities has no power of regeneration and insufficient blood supply to support a covering layer of granulations that will protect against eburnation. Irregular fractures fissures forming a nidus or harboring a minute sequestrum should be looked for and eradicated. Finally the bony surface must be made smooth and free from spicules or sharp corners, which are always slow to cover. Definite bleeding points may be tied and complete hæmostasis secured by prolonged irrigation with hot saline and a few minutes' packing. Further trimming of the soft parts may be necessary to complete a careful "toilette."

We now have a wide open wound from which all diseased tissue has been removed. But being accomplished in a septic field, organisms are still present in considerable numbers and no immediate antiseptic will kill them without at the same time damaging the body tissues also. However, the infection is a surface one and the tissues have a natural defensive mechanism against it. The Carrel-Dakin technique was found to be the best method of making these efforts successful. The excellent work of Fleming (13) has indicated that the success is due more to the physiological than to the antiseptic effects of the solution; but the method was found to make sterilization and successful secondary suture possible more uniformly than any other. Scrupulous attention to certain details, however, was found to be essential. In the first place, instillation tubes must be carefully placed and irrigation begun at once, in order that the required action be secured before invasion of the susceptible tissues by the bacteria on the surface has taken place. This requires complete hæmostasis for two

Present illness. While standing at the dinner table at 12 o'clock today, she was taken with severe pain in the lower left quadrant of the abdomen. "She lay down and yelled, then became covered with cold sweat, and then vomited." She soon suffered from air hunger and thirst; called a physician, who ordered her to the hospital. She was removed in a furniture van, no ambulance being available because of the influenza epidemic which was then at its height.

Her physical examination on admission showed a well nourished woman, with an ashen white face, cyanotic lips and fingers, and very anxious expression, calling for water and complaining of smothering, although apparently not in pain. Head examination was negative, lungs clear, apex in the fifth space, very rapid, sounds clear, and of good quality. Pulse 150, poor tension but well sustained. Abdomen, quite distended and tender throughout, no rigidity, although quite resistant to deep pressure; shifting dullness in flanks; no masses to be felt.

Vaginal examination Tenderness in right and left fornix, especially on movement of cervix, which presented the softness of pregnancy but was closed. The fundus could be made out very indefinitely about the size of a three months' pregnancy. No masses could be felt in the adnexa but a definite resistance was present in the cul-de-sac and in both fornices.

Her blood pressure was 50 over 30, blood count showed 2,150,000 red cells, hæmoglobin 30 per cent. A provisional diagnosis of ruptured ectopic pregnancy was made.

She was given $\frac{1}{4}$ of a grain of morphine hypodermatically and prepared for operation. The bed was placed in Clark's position and in 2 hours the pulse had improved in quality and diminished in frequency from 150 to 120. She was catheterized, and under ether and oxygen anaesthesia a median incision found the abdomen distended with blood, and containing a dead foetus about 17 centimeters long, which was attached by the cord to a placenta, which in turn was protruding from a rupture in a rudimentary horn on the left side of the uterus. In the rupture and subsequent contraction this portion of the uterus had turned practically inside out.

The horn and left tube and ovary were clamped off and removed. The left round ligament was severed from the horn and attached to the uterus just above the wound. The uterine wound was closed with two layers of sutures, the blood removed from the abdomen, and the abdomen closed by layer suture.

The patient had a sharp reaction, temperature reaching 105° and the pulse going to 180. She was kept morphinized and stimulated with digalen and strychnine.

She improved steadily and was discharged from the hospital on the twentieth day, her blood count then showing 3,576,000 red cells and hæmoglobin 53 per cent.

communication with the uterine cavity could be found. The fallopian tube on that side was patent, and the round ligament was attached to the anterior and outer aspect of the rudimentary horn.

The subsequent history of this case is interesting in that she became pregnant in 1918 of the uterus so far to the left that engagement of a breech presentation did not occur, and I delivered her by abdominal caesarean. In contrast to that clinical picture note this report.

CASE 2. Mrs. —, No 75,086, was admitted to the Methodist Hospital, September 25, 1919. She gave the following history: Married two years; 21 years of age; white, native of the United States.

Her chief complaint was labor with convulsions. The family and past history were negative. Menstrual history began at 13, scanty, regular, very painful, 5 days, 28 day type.

Present condition. Last menstruation in December, 1918. She felt life in April, and confinement was due in September, 1919. There is a history of some headache and swelling of the legs, through the latter months of pregnancy. She was under the care of her family doctor. The onset of her present condition was noted on the day of her admission to the hospital, blinding headaches with the advent of convulsions, three occurring before admission to the hospital by ambulance at 1:50 a.m.

Examination on admission showed a stuporous woman at eighth month of pregnancy; heart and lungs negative, in active labor, no foetal heart sounds. Pelvic measurements showed an ample pelvis; rectal examination showed a cervix very high up and to the left, as admitting two fingers, a presenting part engaging. Her blood pressure 170-100. A few drops of urine obtained with catheter boiled solid.

The patient was placed on routine obstetrical treatment and as she was in active labor at immediate delivery was made. On examination by vagina showed a presenting part, the head, well engaged in the pelvis, placing the cervix high up and to the left. The dilatation was only 2 fingers with some shortening.

The uterus was tonic, no foetal heart. The baby being dead and not very large, it was terminated to deliver her at once by caesarean section and craniotomy.

She was prepared and moved to the operating room and my associate, H. B. —, made the usual incision of vaginal caesarean.

grafts were less successful and were given up. The wound was then closed in layers with approximation of muscle planes, superficial fascia, and skin. The result was a non-adherent linear scar presenting no obstacle to return of muscle function. This method occasionally was not completely applicable from scarcity of soft tissues around the wound, due to atrophy or in situation around the ankle or foot. Extensive loss of skin here would have to be met by a two-stage plastic from the other leg, but where the integument could be easily brought together successful closures were obtained by filling the cavity with "bipp." In most of these plastic operations a rubber dam or capillary drain of silkworm-gut was left in the lower angle of the wound for 48 hours to evacuate serum or broken down blood clot. As no bone work was done at this final operation a general anæsthetic was almost never given, novocaine locally being used without difficulty. A first intention wound was the usual result being obtained in about 80 per cent; complete failure to close the wound occurred but rarely.

That so extensive an operation of wound reconstruction was possible on the site of recent persistent suppuration seems to the writer the best testimony as to the foregoing procedure. The system as outlined from the beginning is essentially that practiced by Chutro, who in a series of 300 operations had only five unsuccessful cases. But that time alone can show the end-result is evidenced by the fact that one of Chutro's successful cases relapsed several months after being discharged cured, and came under the writer's care with a persistent bone sinus and sequestra present at operation, and a similar course may have occurred in some of the cases from which these observations have been drawn.

SUMMARY

1. In the year following the Armistice about 500 cases of persistent bone sinuses following gunshot wounds came under observation for varying periods of time.

2. These had presented an unusually stubborn surgical problem and in spite of prolonged surgical treatment little progress was being made toward a cure.

3. The writer was privileged to have the control of the operative and postoperative treatment of about half of these, and during this experience evolved a procedure, also independently arrived at by others, which led to the clinical cure of the great majority.

4. It was found that the presence of an infected bony cavity was the essential cause; that a revision operation sufficiently radical entirely to eliminate this faulty configuration was the first step required; that the concomitant infection could be effectively controlled and terminated in a comparatively brief time by careful wound treatment based on physiological and antiseptic grounds.

5. It thereby became possible, as well as desirable from the functional standpoint, to close these wounds by a bold reconstruction operation.

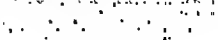
CONCLUSIONS

1. Persistent bone sinuses are a very common and a very serious complication of gun-shot wounds producing compound, comminuted fractures, unusually resistant to ordinary surgical treatment.

2. A system of operative and postoperative procedure directed against the underlying etiological factors has been devised after considerable experience which in a high percentage produces a clinical cure.

3. Such a method must stand the further test of late results before it can be regarded as the means of permanent cure in every case.

NOTE.—Having no access to any roentgenograms of the cases in this series, the writer is able to illustrate the nature of the lesions by the



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SARCOMA OF THE STOMACH

WITH REPORT OF A CASE AND AN ANALYSIS OF 107 CASES OPERATED UPON¹

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PRIMARY gastric sarcoma is one of the rarest surgical diseases. There is but one example of sarcoma of the stomach in 840 specimens of sarcoma in the Berlin Pathological Institute. Sarcoma was present in only 4 of the 921 cases of gastric cancer operatively and pathologically studied by Smithies. Tilger cites 4 cases in 3,500 sarcomata. It occurred six times in 13,387 necropsies (Hosch). In 27,250 abdominal sections at the Mayo Clinic in 5 years (Masson), there were 8 sarcomata of the stomach, and of 2,067 malignancies of the stomach (1908-1920), 13 proved to be sarcomata, or 1 sarcoma to 159 carcinomata of the stomach.

In 1847, Bruch recorded the first case of gastric sarcoma. Forty years later, Virchow operated on the first patient. In 1900, Fenwick studied 60 cases in the literature and concluded that 53 of them were authentic. Since that time many other cases have been published, the majority being necropsy specimens.

In 1912, Gossett added 16 cases to Zesas's collection and reported them together with his case, making 61. Of this number, 39 were exogastric and 22 were endogastric. Of the latter, 13 were resected, with 5 deaths. Of 3 living, 1 lived 4 years and 1, 6 years. Of the 29 gastrectomies of the exogastric type, there

¹Presented before the Southern Surgical Association, New Orleans, December 15, 1919.

some form of talipes Subtracting 13 cases in which the child was under 7 months, if all the remaining cases in which the child's condition was not stated were perfect, there were 26.6 per cent deformed to a greater or less extent. The deformities must not be taken as meaning that these children were imperfect in development but rather that the deformity was the result of pressure from the restricted space in which they existed.

Symptoms In 29 cases abstracted in full, 8 gave a history of primary rupture, 26.9 per cent. In 15 cases there was no history of primary rupture and in 6 the records were doubtful.

Considering the fact that while primary abdominal pregnancy may exist, it is quite rare, and therefore that practically all cases must undergo tubal rupture or tubal abortion, it would seem that these figures are rather less than one would expect. On the other hand, when one remembers the number of cases undiagnosed or wrongly diagnosed at the time of primary rupture, they do not seem so far wrong. Be that as it may, the fact remains that a careful consideration of abnormal conditions which probably existed during the first 3 months of the pregnancy should throw some light on the diagnosis.

Polak comments upon the large number of mothers showing evidences of toxæmia. In over 80 per cent of cases, pain was the most prominent symptom. It was variously described as "colic" or "paroxysmal abdominal pain" with nausea and vomiting and the attacks were followed by faintness and syncope. In nearly half the cases there was irregular bleeding from the uterus, the amount in some cases being very slight, while in others the amount was such as to be described as hemorrhage. In one case menstruation recurred regularly up to the time of operation, which was done in the sixth month. In other cases there was "syncope," "fainting spells," "abdominal crises," "peritoneal irritation," "dysuria," and "frequent micturition."

Placenta. In most cases, as would be expected, the placenta was attached to the pelvic organs: uterus, broad ligaments, tubes, pelvic wall, small intestines, and sigmoid. In two cases it was attached to the liver. In

operator and the greatest safety to the patient. Next in safety are the cases in which the placenta can be removed together with the structures to which it is attached, removing the placenta without detaching it. The disposition of the placenta was stated in 45 cases: in 30 it was removed with a mortality of 10 per cent; in 15 cases it was left or partially removed, with a mortality of 40 per cent.

This speaks strongly for the removal of the placenta but cases doubtless recovered without removal which would have died with removal.

Size of uterus. This was stated in only a few cases: in 6 cases operated upon at term it was variously described as "very much enlarged," "to umbilicus," "size of 3 months' pregnancy," "double the normal size," "somewhat larger and softer than normal," and "size of a 2½ months' pregnancy." One at the seventh month was "markedly enlarged" and one at the sixth month "the size of an adult fist."

From this one would conclude that the uterus is variable in size, probably depending upon the attachments and blood supply.

Treatment From a perusal of the histories of cases of abdominal pregnancy, they may be divided into three classes: first, those in whom the pregnancy is, while not normal, so nearly so that they do not consult a physician, or, if they do, their condition is not recognized until after spurious labor with failure of the woman to deliver herself; second, those in whom the condition is recognized but whose complaints are of minor importance and who, if let alone, will probably go on to term without serious mishap; third, those who are impelled by constant pain, attacks of syncope, hemorrhage or toxæmia, etc., to consult a physician and who need immediate operative interference if they are to be given a chance to survive.

Those in Class 1 are probably in the majority but as they do not come for treatment until after the death of the child, they are not discussed in this paper. Suffice it to

"A sarcoma of the stomach may be, according to its cell origin, a leiomyosarcoma, a fibrosarcoma, a lymphosarcoma, or an endothelioma. There is little doubt also that some or many of these so-called large, round-celled sarcomata are of muscular origin" (Ewing). Any one of these, like sarcoma elsewhere, may have either round cells or spindle cells, the former, as is well known, being the most malignant. A lymphosarcoma is most likely to metastasize, whereas an endothelioma is least likely to. A leiomyoma is the slowest growth, but as a rule occurs at a later age than lymphosarcoma or fibrosarcoma. The grafting of sarcoma, whether round or spindle celled, upon leiomyoma of the stomach is, according to Warner, doubtless identical with a similar process in the uterus. Probably neither is malignant in the beginning.

The microscopic diagnosis was given in 76 cases. There were:

- 12 Spindle-cell sarcomata
- 17 Lymphosarcomata
- 8 Round-cell sarcomata
- 8 Fibrosarcomata
- 4 Sarcomata (only)
- 5 Myosarcomata
- 2 Small round-cell sarcomata
- 3 Large round-cell sarcomata
- 2 Leiomyomata (malignant)
- 2 Leiomyosarcomata
- 3 Myxosarcomata
- 4 Mixed-cell sarcomata
- 1 Cystic sarcoma
- 1 Angiosarcoma
- 2 Fusio-cellular sarcomata
- 1 Haemangio-endothelioblastoma
- 1 Myxofibroma

Among these 61 cases the posterior wall was involved sixteen times, the greater curvature ten times, the pylorus gave origin to the tumor in 7 cases, the tumor was diffuse in 8 cases, the lesser curvature was involved seven times, and the anterior wall four times. The fundus was the site of the growth in 2 cases. The entire stomach was involved in 3 cases. The stomach was described as being reduced to a band in one. The greater portion of both sides of the stomach was affected in 1 case. The tumor was described as being near the pylorus in 1 case, and in another the tumor was attached to the stomach omentum and the transverse colon. In one case the pylorus was spoken of as being normal, the tumor involving other portions of the organ.

Sarcoma is said to metastasize in 40 per cent of the cases. In this regard it is not nearly so malignant as carcinoma. It is prone to metastasize in the skin. This feature has been considered of diagnostic significance. However, Leube found a case in which there was carcinoma of the stomach and sarcomatous nodules in the skin. Sarcoma springs from the muscularis and submucosa and not infrequently dissects its way between the mucous and muscular layers. Ulceration may occur through the mucosa. Perforation is apt to occur. This is especially true of the round-cell sarcoma which is said to perforate in 10 per cent of cases. Lymphosarcoma may be a primary or a secondary lesion, or it may be a manifestation of Hodgkin's disease and not primary sarcoma. A stenosed pylorus has been found in about 7 per cent of the cases.

The diagnosis of sarcoma of the stomach before operation is often impossible. There may be no gastric symptoms whatever. This condition, like all other forms of malignancy, produces rapid loss of flesh, anæmia, weakness, and later cachexia. Only an operative diagnosis is possible. Hæmorrhage from the stomach and blood in the stools is a frequent occurrence, especially in the round-cell variety, although in sarcoma as a rule it is not as frequent as in carcinoma. Ulcer of the stomach may be considered, especially if there is a history of indigestion. The rapid wasting may suggest carcinoma. But sarcoma unlike ulcer or carcinoma does not give a long history of dyspepsia and in sarcoma there are less likely to be symptoms of obstruction. There is more apt to be a palpable mass in sarcoma. Vomiting occurred in 20 per cent of the cases. Pain comes early and persists. The tumors are often large. In Cantwell's case the tumor weighed 12 pounds. The pedunculated variety which projects into the lumen of the stomach may produce intermittent obstruction and vomiting. Pain after food may simulate ulcer, but the long history which is so characteristic of gastric ulcer is absent in gastric sarcoma. Benign tumors of the stomach may undergo sarcomatous degeneration. One case report in the literature had had a tumor for years, which was thought to be an ovarian cyst. Operation revealed a sarcoma of the stomach

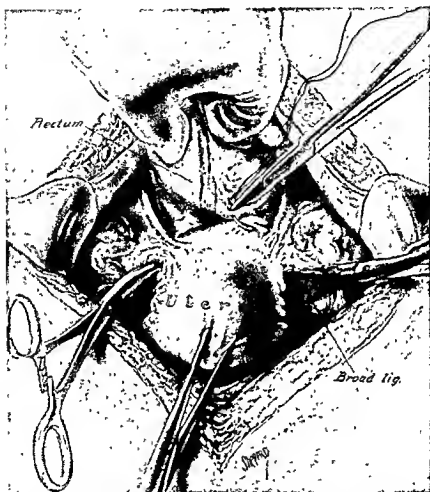


Fig. 1. Broad ligament clamped and severed at both sides of uterus. Rectum pulled forward and sutured to cervical ends of vagina and uterus obliterating cul-de-sac of Douglas.

(A New Operation for Prolapse of the Rectum in Women.—H. M. Richter.)



Fig. 1 Gross specimen of sarcoma of lesser curvature of the stomach.

mucosa of the stomach shows several small, gelatinous nodules.

Microscopic pathology. Sections were taken from the nodules which projected into the stomach. The mucosa shows no change. The greater portion of the submucosa intervenes between the tumor and the mucosa. The tumor consists of a very cellular tissue with very few definitely formed intercellular fibers (Fig. 3). The cells are principally of the embry-



Fig. 2 Cross section of sarcoma of lesser curvature of the stomach.

Egana, together with 18 cases from the literature, aggregating 92 operative cases. In addition to these, I have analyzed 13 unpublished cases from the Mayo Clinic (2 of these were quoted by Douglas as reported by Hunt-

Diagnosis. Fibromyosarcoma.

"The sections of tumor of the stomach which you sent me I would interpret as leiomyosarcoma (Fig. 3).

"The tumor tissue is composed of rather small spindle cells with small hyperchromatic nuclei, and cytoplasm which is rather opaque and eosinophile. The cells are arranged irregularly, but in some places they are grouped in small clusters often about a minute blood vessel. This feature is occasionally seen in cellular uterine myomata. The stroma is very scanty except about the outskirts of the tumor. There are no signs of necrosis. I should not expect this tumor to metastasize, nor to recur locally if completely removed, but its cellular character deserves the histological designation as sarcoma" (James Ewing).

Douglas in an excellent review of the subject added 3 personal cases to the former collection of Forni (1914) and Medina and

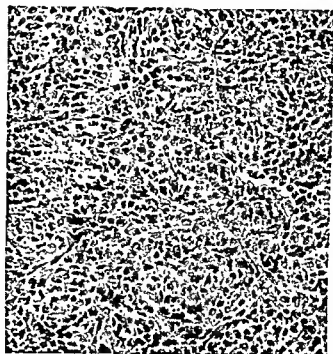


Fig. 3. Microscopic section of sarcoma of lesser curvature of the stomach.

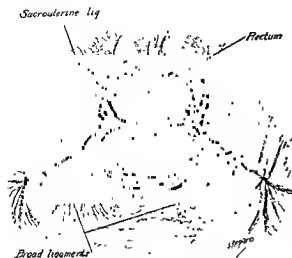


Fig 4 Sacro-uterine ligaments sutured to sides of rectum. Free edges of broad ligaments sutured to anterior pelvis

posterior pelvic peritoneum. It is now found that the pelvic cavity is partially obliterated, and that the rectum passes upward and forward, terminating in the lower sigmoid. The free borders of the abdominal fascia are now dissected well back from the skin and subcutaneous fat, leaving the external surfaces exposed. This dissection is carried out only in the lower portion of the incision. The free border of the fascia is sutured to the cervix on each side of the uterus, and the latter further sutured to the anterior surface of the fascia, making a firm, extrafascial fixation of the uterus. As the rectum leaves the uterus, it is further sutured for a distance of an inch or more to the free edges of the abdominal fascia. The closure of the incision is now completed in the usual manner.

It is probable that the recurrence of ptosis, following plastic operations on the various viscera, is due to the inability of peritoneal union to withstand strain or tension. Thus, after the most extensive suturing of rectum and sigmoid to the pelvic and abdominal wall, recurrence is exceedingly common. The fixation of the rectum to

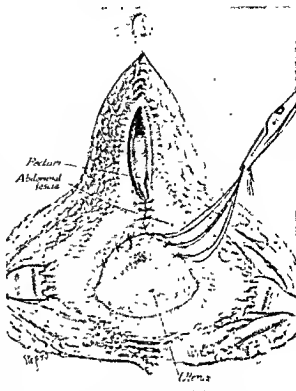


Fig 5 Uterus and rectum sutured to free border of abdominal fascia, the uterine fundus being extrafascial. The skin will be sutured over the fundus

vagina, uterus, and abdominal wall is of but moderate value, the permanency of its fixation probably being increased by combining with it the suspension of the uterus. The use of the broad ligaments, however, is, I believe, of considerable value, and the further obliteration of the pelvic space a desirable adjunct.

In a patient, on whom I have recently carried out this operation, the immediate result has been perfect, there being not the slightest bulging. Rectal examination shows the lumen to be snug. The sphincter, which was greatly relaxed by several years of overstretching by the prolapsed mass, was at first entirely functionless, but soon regained its tone.

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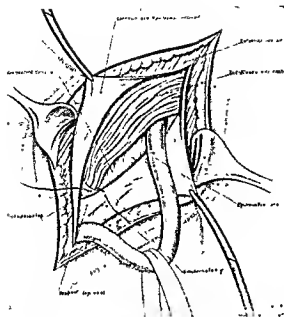
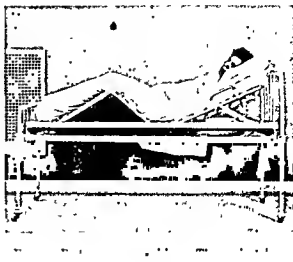


Fig. 3 Same as Figure 2, with the patient in the position of maximum physiological relaxation. Note the

cent, the average being 35 per cent. The approachment of these parts is further facilitated by raising the head and shoulders of the patient, which relaxes the rectus and the abdominal wall. In the slighter forms of hernia the gap is almost obliterated. In hernial operations done under local anæsthesia this position aids in combating muscular tension.

We have employed this position of muscular balance for 10 years. During the last 5 years, we have found it necessary to perform the trans-



plantation of the rectus only once. To insure relaxation during the period of healing, the position is maintained for at least 7 days (Fig. 4).

Not so very long ago it was the custom of a well-known clinic to immobilize their post-operative herniæ in plaster spicas. No more barbarous or unphysiological position could be devised; yet one still encounters warm advocates of this folly.

SUMMARY

In order to insure firm union, all tension must be avoided. Tight suturing means tissue tension, impairment of nutrition, and the possibility of a replacement fibrosis. In the operative treatment of inguinal hernia this elementary procedure of placing the parts in a position of muscular rest simplifies the closure, aids union, and insures a comfortable convalescence.



Fig. 1. Illustrative of a number of high femur lesions
 "excessive
 the lesser
 nion with

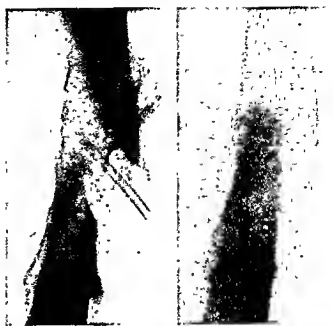


Fig. 2. X-rayed with tube inserted to show direction of sinus. Note common tendency to disintegration of projecting ends of fragments.

Fig. 2a. Same case illustrating excellent result of radical treatment (operated upon by Captain Rice). Note degree to which projecting spicules have been resected.

No. 30 General Hospital. As practically all the patients remaining in the first two were evacuated to the third, many could be followed through a considerable period.

The observations, conclusions, and methods of treatment arrived at, as will be presented below, were obtained wholly by evolution and experiences with the problems offered by this series. Since return to civil life, however, the writer has had opportunity to go over the contemporary literature and finds that others, after struggling with the same problem, have arrived at and set forth similar conclusions. Therefore, this report is not presented as a new suggestion, but as another contribution to the recent trend of opinion on this phase of war surgery.

The one characteristic which all the cases of this series had in common was the existence of an infected bony cavity. Pedro Chutro (1) of Argentine, after a long experience in France with the sequelae of gunshot wounds, has

strongly emphasized these factors of infection in a bony cavity with incollapsible, unregenerative walls. But in the common civil condition of "Brodie's abscess," we have seen an infected bony cavity which, if evacuated and sutured, generally gave no more trouble. Perhaps the avirulent nature of this "albus" infection and the moderate degree of bone sclerosis have made these more amenable to treatment. Martin (2) has recently gone over the subject of persistent bone sinuses as seen in civil work and the attempts previously devised to obliterate them, and is using methods of treatment similar to those of the writer. Leriche believes that the infectious process limits the power of bone to fill the cavity or to provide his *milieu ossifiable* (3). Sargent mentions a case showing a cavity 3 inches long from which, 16 years before, a 4-inch sequestrum had been removed (4).

In the past the integrity of this bony chamber has been accepted, and cure attempted by plugging with various media. In the last 50 years the number of materials of such purpose advocated is almost legion, and includes of absorbable nature, sea-sponge,

DESCRIPTION OF A SUPRAPUBIC PROSTATIC RETRACTOR

By ROBERT EMMETT FARR, M.D., F.A.C.S., MINNEAPOLIS, MINNESOTA

THE first manipulation of a surgeon when doing a suprapubic prostatectomy is to place one, or more often two, fingers of one hand in the rectum to feel the enucleating plane but that

manipulation is eliminated. As a factor, the rectal dilatation markedly interferes with a smooth anæsthesia. If general anæsthesia is used, a deeper narcosis is necessary upon dilating

the sphincter. Under local anæsthesia, the introduction of the fingers into the rectum is a serious handicap.

The instrument which I have devised will effectually do all and even more than the rectal finger can do, thus eliminating the necessity of the latter.

The prostatic retractor, closed (Fig. 1), is introduced into the internal urethra for a distance depending upon the approximate size of the prostate. The prongs are then opened (Fig. 2),

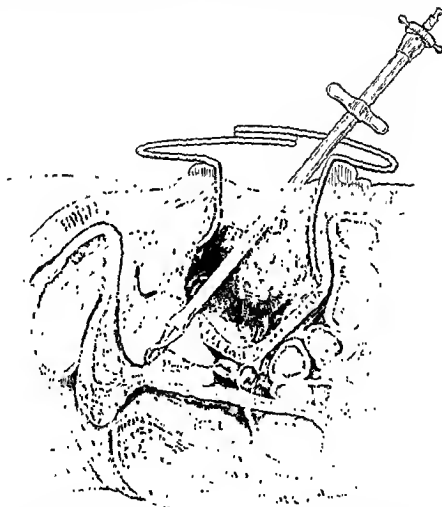


Fig. 1. Sagittal section showing suprapubic prostatic retractor (closed) introduced into the internal urethra.

evolved by the writer, that of an extremely radical revision or ablation operation, by which the disease and its maintaining causes are removed, followed by the application of the Carrel-Dakin technique to prevent reinfection of the newly exposed surfaces and to permit later closure by plastic operation or simple secondary suture, was first advocated by Jacob (12), of Belgium, at the end of 1917, and has since been frequently emphasized by Chutro. The value of the Carrel-Dakin technique as a postoperative aid has been urged in this particular problem by Professor Carrel himself, and by Cotton, Rice, and others on this side and abroad.

GENERAL NATURE OF CASES AND ANTECEDENT COURSE

The patients in this series were all American Expeditionary Force cases received for final disposition in army general hospitals on this side. With a few exceptions they were originally gunshot wounds with compound comminuted fractures. The femur was the bone most often involved, with the tibia very close in frequency; humerus lesions made up a much smaller group, while sinuses leading to the bones of the forearm or to the fibula without involvement of tibia were met with very rarely. This rarity was much below the relative frequency of injuries in this region, but when received on this side lesions of these smaller bones had much more frequently healed. The writer attributes this to more radical methods of early treatment, a factor which will be referred to later. In the series, union was present, either bony or fibrous, save in a small percentage of cases. In fact more patients were received in these hospitals having non-union with healed wounds than with persistent sinuses. The longest period since injury was 24 months; the great majority were between 6 and 18 months' duration; and one patient was wounded only 3 months prior to admission, having been accidentally shot in machine-gun practice after the armistice. The analysis of previous treatment was of interest. The number where early and adequate surgical treatment had not been received was very slightly larger than that of those receiving an



Fig. 6 (at left) X-ray of femur of Pvt K showing overriding fracture in soft fibrous callus with sequestrum in lower fragment.

Fig. 6a. Same case after conservative operation indicated because of complicating heart lesion. The wound cleaned up in a satisfactory manner with Carrel after treatment. The progressive atrophy of the upper frag-

mentation
the patient's
the neces-
sity of facing a loss of continuity being accepted, radical operation was performed by the writer. A small amount of the lower fragment had to be removed and about 3 inches of upper resected. The fragments were kept apart and pocketing prevented by traction. After 2 weeks of Carrel treatment the bone ends had disappeared under firm granulations and another 2 weeks found the wound clinically sterile. As it was filling in with great rapidity, suture was unnecessary. Of course a graft was ultimately required.

immediate débridement operation. This apparently surprising result is explained probably by the fact that a far greater proportion of wounded did receive adequate early treatment, and that a considerable number of these became reinfected and subsequently septic during evacuations and transport. In fact the story of almost every soldier bore testimony to the evils of interrupted and

TREATMENT OF PROCIDENTIA IN THE NULLIPAROUS¹

By GEORGE ERETY SHOEMAKER, M.D., F.A.C.S., PHILADELPHIA
Gynecologist, Presbyterian Hospital

THE writer has notes of eight cases showing various degrees of prolapsus of the uterus in nulliparous women, which have been treated by various methods.

Vaginal hysterectomy alone was done in two instances, single women, one aged 57, the other 70. The protrusion of a small thumb-like cervix, without hypertrophy, for an inch and a half, without much descent of vaginal walls rendered this method desirable. Both have had entire comfort since, one for 2 years, the other for 7. Both had had suspicious bleeding previously.

and supravaginal hysterectomy with suspension of the stump. This patient had a small fibroma and remains well. Two were treated by plastic

children. She had a polypus removed and wore

method of dealing with the uterus of the condition where the whole small uterus with bladder comes out, inverting the vagina either completely or nearly so.

In this condition in one instance the writer has failed of permanent success by the ordinary methods which are applied in multiparæ and has been obliged to resort to hysterectomy. In multiparæ the perineal injury is contributory and at operation the normal muscular and fascial relations can be restored for support. In the congenitally defective patient, however, the vaginal walls and connective tissues slide upon one another without the occurrence of gaping of the vagina and there is no injury to repair. This may be illustrated by the following case.

R. McG., age 28, single, was referred by her physician in 1907 for a disabling prolapsus of the uterus, vagina, and portions of the bladder. The protrusion had been

complete for 5 months when on the feet. Menstruation was normal. She had never been pregnant according to the history and there were no marks to indicate that it had ever occurred. The vagina was small, smooth, and straight.

On the first occasion were. He ure all, ed, us. sat r 4 un- ver ing. The Mer 444 2722 ally in the inversion of the vagina us being present n resembled the seen in severe, certain that preg-

As conservative measures had failed, and as the patient was 40, with her consent, hysterectomy was done with overlapping and suture of the stumps of the broad ligaments in the vagina, attaching them also under the pubic arch. Such a method has been described by Charles Mayo.

tissue. As there was no lacerated perineum to repair and so gain support, obliteration of the

vagina. The entire vaginal wall was then dissected downward and removed at the outlet. Sutures of catgut were placed in layers to approximate the walls of the cavity from side to side, completely obliterating it.

When seen 3 months later, she was entirely comfortable, and perfectly supported. A canal under the urethra was an inch deep and would admit a pencil.

¹Read before the Philadelphia Obstetrical Society, March 4, 1910.

tion in the shorter fragment was regularly observed, which corresponds with Chutro's theory of the defective nutrition of a shorter fragment following fracture.

Lesions of the carpus and tarsus resulting in bone fistulae were met but infrequently, but these cases almost always progressed until all the articulating surfaces were completely destroyed and bony ankylosis was obtained. After this stage they showed a tendency to spontaneous healing, or were amenable to ordinary surgical treatment. Exceptions were noted in lesions of the tarsus which had resulted in the formation of a very large osseous mass of fused bones having a central necrotic chamber; but even these responded readily to the technique to be described.

ETIOLOGY

In the etiology of these conditions, two groups of factors should be considered.

1. Initial, comprising trauma, infection, and the presence of foreign bodies. In the term "foreign bodies" the writer has in mind not only the original projectile and debris carried into the wound, and secondary projectiles of small bone spicules driven into the soft parts and forming foci of infection in the eventual callus; but includes also the larger intervening fragments in comminuted fractures, in regard to which the teaching has always been insistent to leave in place as aids to union. In almost every case in this series resulting from a badly comminuted fracture, there was found at operation a sequestrum centrally located and by its nature evidently a piece of the original shaft. While engaged in the early treatment of this type of case in France in 1916, the writer followed the customary practice of leaving in place such larger fragments between the bone ends, but at the same time used to wonder what was really their ultimate fate in the unfavorable surroundings of prolonged infection. That these fragments may have a very definite effect in bridging a gap and promoting osteogenesis will not be denied; but in the writer's experience the complications of delayed union or even of non-union in conjunction with the excellent results obtained by bone grafting are not to be compared with the protracted

convalescence, the functional disturbance and disability, and the dangers of sepsis resulting from the maintenance of these foci of suppuration. The writer accordingly recommends removal at the original operation of all fragments of bone not supplied with both endosteum and periosteum.

2. Eventual factors, which are the most important in connection with the treatment of condition, consisting of bony cavity plus infection. The cavity, its walls rigid and non-collapsible, is perpetuated by the results of the infection, which causes the osteosclerosis in the walls, preventing bone regeneration and following the support of only a thin layer of unhealthy granulations.

The bacteriology of these cases can readily be conceived. A most varied flora was regularly found. Saprophytic contamination, proteus and pyocyanous, were common. *Staphylococcus aureus* was almost invariably present and the predominating organism; but a few cases were seen which had refused to heal and which showed only a feeble albus growth from the bony cavity. Short chain streptococci were fairly common and without especial significance; but the history of flare-ups with high fever often led to the suspicion and discovery before operation of the streptococcus hemolyticus, necessitating appropriate safeguards.

DIAGNOSIS

The diagnosis of the underlying pathology in these conditions could often be made upon a superficial local examination. The presence of a discharging sinus, with the introduction of probe followed by copious oozing of venous blood was always very significant. Often cheesy bone could be felt with the probe, and sometimes the telltale sequestrum. Cases showing dried-up sinuses but with a history of repeated previous remissions followed by local pain, heat, swelling and fever and by return of discharge in the same or other old sinuses, could almost always be depended upon to recur or to show still existent pathology by X-ray. While roentgenograms, especially stereoscopic, were found invaluable in locating bony cavities and sequestra and planning the scope of operative intervention,

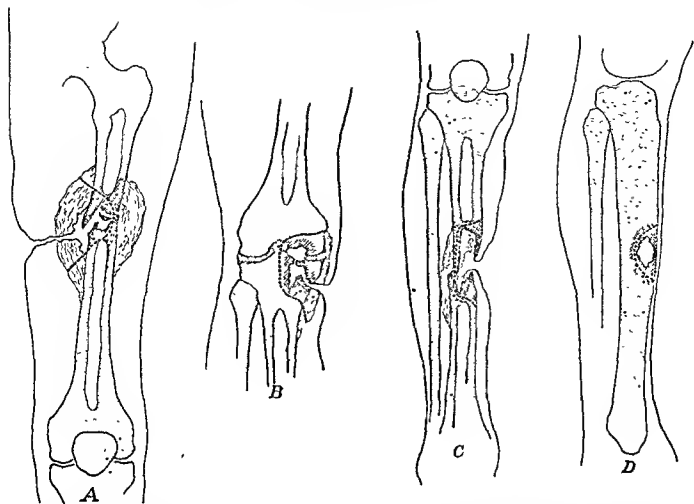


Fig. 7. a, Schematic drawing to show common type of fracture with slight displacement, large callus, central cavity with sequestrum, absorption of spicule, and sinus to surface. Dotted line indicates extent of bony excision. Shading represents sclerosis around cavity cutting off medulla. b, Illustrates old T fractured tibia with ankylosis. c, Incomplete fracture from seton wound. d, Incomplete fracture from seton wound.

tion and localizing measures. Occasionally cases are met that are extremely bad operative risks, anæmic and toxic from long continued septic absorption, and with little improvement in general condition following any operative measure short of complete removal of the diseased area. For these the writer wishes particularly to emphasize the importance of transfusion of blood, not after, but prior to operation. The only fatality in this series, a high femur lesion, could probably have been avoided if transfusion had been done before operation. The usefulness of this measure in dealing with sepsis has been recognized by other operators, and "straight" blood seems to be more efficacious than citrated.

An attempt was always made to determine the approach and general procedure by careful study of stereoscopic roentgenograms in conjunction with the clinical aspect of the wound. Thus the incision would not always be through the existing sinus but often through an older scar, if better accessibility could be obtained in that way; and on certain occasions it was found advantageous to approach through an entirely new field. Operation was rarely done under a tourniquet, and the writer is distinctly opposed to the use of one. Shutting off the blood supply certainly makes operating much easier and more enjoyable, for the diffuse and persistent oozing from the old scar tissue is highly exasperating. The only argument in favor is

It was unanimously decided that the next annual meeting for the state of Oregon be held in Portland, and the following committee was elected:

Chairman, Andrew Smith, Portland.

Secretary, Joseph A. Pettit, Portland.

Counselor, E. F. Tucker, Portland.

For the state of Washington, Spokane was chosen as the meeting place for the next annual session. The committee chosen includes:

Chairman, Charles F. Eikenbary, Spokane.

Secretary, George C. Bryan, Walla Walla.

Counselor, Charles M. Doland, Spokane.

The time and place for the next Pennsylvania state sectional meeting was not decided upon but was left to the discretion of the executive committee:

Chairman, W. L. Estes, South Bethlehem.

Secretary, Astley P. C. Ashhurst, Philadelphia.

Counselor, J. J. Buchanan, Pittsburgh.

We wish to commend most highly the splendid work that has been done by the executive committees and clinicians in the states in which meetings have been held. With such co-operation and hard work only the greatest success awaits future meetings of the sections

reasons: one that clotting takes place very slowly in the presence of Dakin's solution and oozing will continue often for days, with bleeding from a considerable vessel occasionally occurring some time after operation; the other that the presence of blood and serum in the wound destroys the bactericidal properties of the solution. In addition the formation of a clot adherent to bone surface will protect underlying organisms from the bactericidal action of both antiseptic and normal wound exudate. Chutro has frequently observed bone infection occurring under the protection of blood clot. The action of the solution in removing a certain inevitable accumulation of blood and serum is a further indication for early instillation. Packing with gauze should be minimal and only sufficient to hold the tubes in place. Wound margins may be caught back with sutures or wedged apart by interrupted rolls of gauze. Immobilization of the part is indicated without regard to bony union and metal splints are far more preferable than plaster.

The dressing, save for change of outer pads, is not disturbed for 48 hours. A rise of one or two degrees of temperature always occurs during this period, but the rise of temperature is a ways in inverse proportion to the care at operation in keeping within the walled-off area in the soft tissues and avoiding fresh lymphatic channels. At the end of this time the tissues are much less sensitive and if the skin incision has been protected by vaseline so that the gauze packing will not become adherent a "gas" dressing will not be necessary. The packing is removed, the wound irrigated and margins thoroughly cleaned, but tubes are not removed unless misplaced or clogged. Daily dressings follow with the most careful aseptic technique, and a bacterial count of the wound secretions is made every second day. Careful inspection and toilette of the wound at each dressing will greatly accelerate the sterilization.

At the risk of tediousness space has been given to emphasis of these details only because in the considerable experience of the writer the consistent application of each of them has been followed by consecutively better results. Clinical sterilization often was

reduced to 10 days, although deep-seated lesions of the femur sometimes required as long as four weeks. About 10 per cent developed bone areas which refused to cover up and a bacterial count graph coming to a horizontal just above the base line. These failures without exception the writer attributes to timidity in the operative measures, and second operation was invariably successful.

SECONDARY SUTURE

In the writer's opinion the best criterion as to the value of the technique outlined above lay in the results from secondary suture. For two reasons it has been found essential to do this: first because the maintenance of clinical sterility until cicatrization completes itself is not always possible and can be accomplished only at the expense of an amount of painstaking care and effort not readily available under the conditions at hand; and second because cicatrization by this method results in a prolonged convalescence and a limitation of function which ought to be avoided. Accordingly the wounds were closed as soon as the count fell below an average of one bacterium per field, with the additional criterion that all bone surface must be covered.

It was observed that the end-result of these bone lesions healing in the ordinary manner showed a tremendous functional handicap in the mass of scar tissue extending from the skin into the bone, hindering down the muscles and promoting fibrosis thereof. Accordingly in closing these wounds the writer gave up the method of Carrel of simply bringing the wound edges together, in favor of that of Chutro. In this technique all scar tissue is completely excised down to the periosteum, so that normal muscle and fat alone appear in the wound. The skin and subcutaneous tissues are then freed sufficiently far on each side to allow approximation without tension; parallel incisions at the sides of the limb or a skin plastic are sometimes necessary. Then comes the most important step in the technique, reconstruction of the wound to eliminate any dead space. A flap of muscle or a pedicled fat transplant from under the wound margins was found to serve equally well. Free fat

who could take charge of the routine work. It is preposterous to see the amount of petty routine with which the time of many laboratory men is filled. The hospital laboratory has the opportunity to draw its technicians either from the nursing staff, at times even from patients who may find the relatively easy work attractive to them.

The department of laboratories should be organized on a parity with the departments of surgery and of medicine if results are to be expected that are commensurate with the responsibilities. When so organized, co-operation with the clinical departments is facilitated and much reduplication of effort avoided. A centralization of the laboratory group by no means excludes the maintenance of the smaller ward laboratory that is used to advantage for blood work, urinalysis, etc., by the interne on the service.

SPACE ARRANGEMENT

Needless to say the space devoted to the laboratory will depend entirely on the size of the hospital; the funds available for building and maintenance; how much, if any, commercial work is expected, the type of hospital work, etc. A properly grouped arrangement for a larger hospital might with advantage contain the following central group:

Administration. (a) record room, (h) small reception room for patients; (c) directors' laboratory, (d) reading room for staff.

Pathology. In the older period the dismal mortuary in a dark basement, poorly ventilated and without facilities or conveniences of any kind, effectually discouraged postmortem examination, and is in no small measure responsible for the unfortunate state in which this branch of medical science exists today. Given proper ventilation, refrigeration, and lighting, there is no reason why the postmortem table should not be placed in the laboratory itself or in an immediately adjacent room where the material can be properly and promptly studied. A number of hospitals have already adopted this plan with wholly satisfactory results. The refrigerator for the mortuary can economically be so placed that the general refrigerator room for the laboratory group is combined with it. The laboratory refrigerator room should be so arranged that smaller compartments with separate thermostats are provided where various degrees of temperature can be maintained.

Bacteriology. With its adjacent media and incubator rooms the bacteriological laboratory need offer no difficulty in arrangement. Proper light-

ing should be provided. A laboratory for serology may be combined with advantage with the bacteriology room or with the

Biochemical laboratory. Two features should

digestion methods and other chemical procedures frequently give rise to fumes that are very pungent and irritating and unless proper ventilation is afforded will cause considerable annoyance. (b) Sufficient table space should be provided. The chemical laboratory with its multiplication of glassware and apparatus must be provided

ances between the chemical storeroom and the chemical laboratory will be found very convenient.

Storerooms. A central storeroom for the laboratory group or small storerooms for each laboratory should be provided.

Animal operating room. If investigative work is to be carried on, a small animal operating room with operating table, instruments and sterilizer should be provided. If sufficient room can be spared, a small preparation room should be added.

Animal room. A well ventilated animal room should be maintained for the care of smaller animals such as mice, rabbits, and guinea pigs. If feasible sound proofing can be carried out, a limited number of dogs can be kept in metabolism cages in such a room.

Individual research rooms should be provided where space is available.

THE EQUIPMENT OF THE LABORATORY

The equipment of the laboratories varies to some extent with the character of the work as well as with the size of the laboratory and the financial support given it. Elaborate equipment by no means guarantees efficient results, but this does not justify the idea that no matter how poor or inadequate the equipment a good laboratory staff can secure the best results.

In the following list no effort is made at completeness—it is merely suggestive of the more important items that make up modern equipment. In some instances we have duplicated apparatus such as microscopes and centrifuges for each laboratory. A considerable saving of time is at times possible when the commoner instruments are duplicated, particularly where much routine work has to be carried out.

ABDOMINAL PREGNANCY WITH FŒTUS ALIVE AT TIME OF OPERATION

WITH RÉSUMÉ OF CASES

By JOHN M. MAURY, M D, F A C S, MEMPHIS, TENNESSEE

IN the following résumé of cases of abdominal pregnancy, only those in which the fœtus was living at the time of operation are considered. Discussion is not limited to cases in which the fœtus was viable, because in some the patients were less than 7 months pregnant; and yet, because the fœtus was alive, the operator was confronted with the problem of dealing with a placenta with a still active circulation. Herein lies the difficulty met with in treating cases of abdominal pregnancy.

I have had no cases fulfilling the above requirements. My experience with abdominal pregnancy has been limited to 2 cases in both of which the fœtus was dead at the time of operation.

When the placental circulation has ceased and the fœtus is dead, the operator encounters no greater difficulty than peeling placenta and membranes from adherent viscera. The only alternative is to close the abdomen after removing the fœtus and leave placenta and membranes to be taken care of by the peritoneum. In view of the low mortality attending removal, such a step would, I take it, hardly be looked upon as a legitimate surgical procedure.

IN SURGERY, GYNECOLOGY AND OBSTETRICS, for July and December, 1913, Horsley reported 46 cases from 1897 to the time of writing his article, but his reports are so abbreviated that 14 give only the fate of the mother and child while the balance are deficient in one or more points which are considered in this résumé. However, the cases reported by Horsley are made use of here where possible.

The cases collected for me, 29 in number, were reported during the period from the beginning of 1909 to the end of 1918, and, excluding Horsley's comprised all the cases to be found in the Chicago libraries. There are a number of references in the *Index Medicus* which were not available on ac-

count of war conditions or because the journals are not to be found in Chicago libraries, but the majority of them are cases operated upon after death of the child.

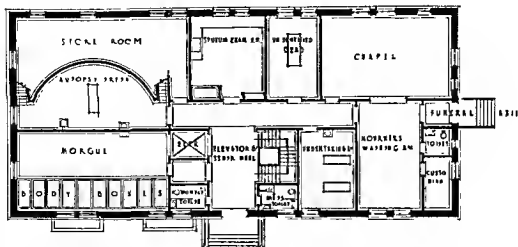
My list, therefore, is not a complete one, but in view of the fact that one man's experience with this condition is usually limited to one case, the number is sufficiently large to warrant the drawing of conclusions.

Diagnosis. In 29 cases the pre-operative diagnosis was made in 18, or 62 per cent. This compares favorably with the pre-operative diagnosis made in ectopics at the time of primary rupture which, according to an average of estimates, is about 50 per cent. It is, of course, highly desirable that ectopic pregnancy should be recognized and operated upon at the time of primary rupture as, only by so doing, may the number of advanced abdominal pregnancies be reduced to a minimum. If it is true that 50 per cent of ectopics are not recognized at the time of rupture, our methods of teaching this subject to students are at least open to criticism.

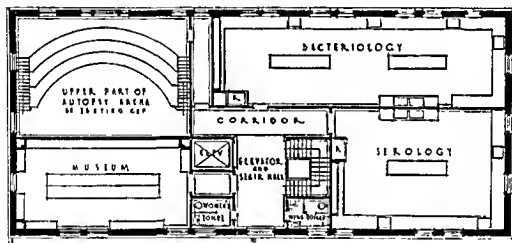
Mortality of mother and child. Of 73 cases operated upon, 55 mothers recovered and 18 died, a mortality of 24.6 per cent. In Harris' tables published in Kelly's *Operative Gynecology* the maternal mortality in the 40 cases operated upon between 1889 and 1896 was 32 per cent, so that there is but little improvement in results. Maternal mortality was, in nearly every case, due to hæmorrhage, sepsis, or both. In addition to these causes one mother died from embolism, one from pneumonia, and one, on the ninth day, from shock following operation for intestinal obstruction.

In 59 cases in which the child was of viable age, 27 died within a period of 3 or 4 days, an infant mortality of 45.7 per cent. In the 40 cases quoted above from Harris' table the infant mortality was 45 per cent.

In many of the case records the condition of the child was not stated but in 16 it was stated that the child was deformed, usually



Plan D Plans for a separate laboratory or wing for a 500-bed hospital made for a public institution. Attention is called to the animal operating rooms, cage rooms, and runway on the roof. Basement plan.



Plan D, first floor

General glassware Slides and cover glasses, watch glasses, test tubes—hard and soft glass; glass tubing and rods, beakers, flasks, bottles—reagent, stain, aspirator and Woulff bottles,

volumetric flasks, separatory funnels, jars, syringes, tripods;

wire gauze, burette holders, filter and parchment paper; funnel holders; rubber tubing; rubber and cork stoppers, bunsen burners and attachments;

microburners, test tube racks, clamps, blast lamps; cork borers, glass cutter rings, spatulas, brushes; asbestos board; cork board, pinchcocks, supports, drain boards, waste pails; pipette holders, test tube brushes, etc.

Chemistry—clinical pathology and serology. Centrifuges, microscopes; urinometers; albuminometers, haemocytometers, haemoglobinometers, polariscope; specific gravity apparatus; water baths (Wassermann, etc.), barometers, calcium chloride cylinders, calcium chloride tubes, balances and weights; basal metabolism apparatus; colorimeter and nephelometer, dissicator, electric stove; hydrometer; Kipp jars, Kjeldahl apparatus; Soxhlet apparatus; vaccine distilling apparatus.

say that they come for operation at the most favorable time so far as saving the mother is concerned. Class 3 comes next in point of numbers. In other words, most of them who consult a physician do so for some serious condition. There can be no question but that operation must be done at once. It is not a question of shall the operation be done but rather a question of shall the placenta be removed after the child is abstracted from the abdomen.

It seems to be the consensus of opinion of the medical profession that all cases of abdominal pregnancy should be operated upon if possible during the life of the fœtus, and this brings us to a consideration of Class 2; the few cases in which the diagnosis of abdominal pregnancy has been made but in which the mother's condition is not jeopardized by the complications enumerated in Class 3. Since the mortality from operation after the death of the fœtus is very much less than from operation during the life of the fœtus, it would seem that operation during the latter period must be based entirely on the hope of saving the child.

This, however, is not the case, because abdominal pregnancy is a potential source of great danger, and a grave crisis may arise at any time demanding immediate operation, and this fact must be taken into consideration in determining whether the operation should be done at once or later.

It has also been pointed out that the farther a woman is from term, the greater are her chances of developing serious complications. In other words, complications are greater in the first half than in the second half of the pregnancy.

It would seem a fair deduction that if cases in Class 2 are seen before 7½ months they should, in the interest of the mother, be operated upon, but if seen after that time, provided they can be kept under close observation, it would be in the interest of the mother to defer operation until after death of child.

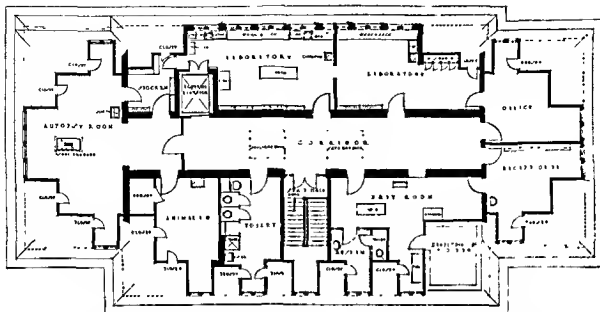
Removal of the placenta. This is a question which must be decided by the operator on the merits of the individual case. Those cases in which the placenta has been removed have given a maternal mortality of 10 per cent

against 40 per cent in which the placenta was not removed. I do not take these figures to mean that the placenta must be removed but that a most careful examination, having in view the feasibility of removing the placenta, must be made and the placenta removed, if there is a fair chance of controlling the blood supply.

If a pedicle-like arrangement exists, the removal is simple. If the placenta grows from organs which can be removed, no separation of the placenta should be made but placenta and organs removed *en masse*. The greatest difficulties are encountered in those cases in which the placenta has developed on the liver, the mesentery, or is plastered on the pelvic wall. These are the cases which tax one's judgment in deciding for or against removal and tax also one's ingenuity in controlling hæmorrhage.

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Plan E Laboratory of St. Thomas' Hospital, Nashville, Tennessee. (Asmus and Clark, architects) The laboratory with X-ray department occupies the entire upper floor. The autopsy room is directly connected to the laboratory.

The plan of a separate adjacent laboratory building has the disadvantage of almost unavoidable isolation from clinical material.

If the work of the laboratory justifies the maintenance of dogs and larger animals, the difficulty of location is increased, inasmuch as the necessity for sound-proofing, ventilation, runways and other outdoor spaces is enhanced. Provisions for such animals can be quite easily made in a separate building at a distance from the hospital which would necessitate less costly construction

above

It appears that the laboratory group should, by preference, be placed on the top floor of the hospital. It usually offers the best light, especially if the principal window has a north exposure. The fluctuations of color and intensity of the light will not vary as much as they do from the other points of the compass, and will permit of more accurate and rapid work for which light and color values are important elements, further, north windows do not require shading by window shades or blinds which may darken the laboratory too much or affect the color of the light.

General use of a separate building for the laboratory

is maintained or where a certain amount of extramural commercial work is done, or the floor space is so occupied that no other place can be obtained.

A laboratory should be separated from other services, and its corridor should not be a passageway for other services of the hospital, if a post-mortem or mortuary room cannot be made a part of the laboratory or located immediately adjacent to it, the elevator or stairway connection should be made as direct and convenient as possible.

Good planning or arrangement of rooms in their proper sequence for convenience of the staff and for their circulation without disturbance must be sought.

FURNITURE

Wood is generally used for work benches, high tables, cabinets, and other furniture. It is more desirable than metal, marble, or soapstone, although the latter is an excellent material for sinks, tops, bookshelves, and also for the bases of gas stoves. Oak, ash, chestnut, and birch are excellent moderate priced materials for the fronts, which should be finished with a filler, if the

DEPARTMENT OF TECHNIQUE

A NEW OPERATION FOR PROLAPSE OF THE RECTUM IN WOMEN

By H. M. RICHTER, M.D., F.A.C.S., CHICAGO

THE results of operation for complete prolapse of the rectum are notoriously unsatisfactory. Neither amputation of the prolapsed section, a most illogical procedure, nor intra-abdominal fixation of the rectum and lower sigmoid have proved satisfactory.

The following operation applies to a limited number of cases, but where it can be used, offers, I believe, a fair degree of permanency of result. The operation is limited to women in whom the broad ligaments and uterus can be utilized for the suspension, and must either be performed after the childbearing period is passed or where sterilization is permissible. The essential features of the operation are: first, the suspension of the rectum by passing the broad ligament behind it; second, the fixation of the rectum to the uterus and of the uterus outside the abdominal fascia.

A free medium incision is made, the uterus drawn well forward and the broad ligaments, including the round ligament and the tube,

severed close to its side. With the hand introduced deeply into the pelvis, the rectum is drawn taut. It will usually be found that a considerable mesorectum is present, and that the prolapse can be completely reduced by this traction. The cul-de-sac of Douglas is obliterated by suturing the anterior surface of the rectum to the posterior surface of the vagina and cervical end of the uterus, reaching well up on to the posterior surface of the uterus, but not up to its free border. During the placing of the sutures the traction on the uterus is somewhat relaxed. The mesorectum is now outlined as low down as possible. Whether well formed or incomplete, it is perforated carefully by means of blunt dissection, making an opening an inch or more in length, and as near the anal end as feasible. Either of the broad ligaments is now drawn through this opening to be sutured to its fellow of the opposite side, thus forming a suspensory hammock.

To obliterate the pelvic space as far as possible, and so prevent the descent of small bowel, is probably desirable. For this purpose the loose peritoneum is closed in. Particularly, the uterosacral ligaments are sutured to the rectum, and the free border of the broad ligaments to the



Fig. 2. Broad ligament pulled through perforation in mesorectum.

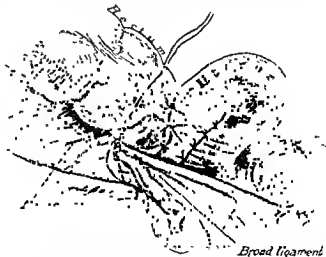


Fig. 3. Broad ligament sutured to its fellow of the opposite side, the latter drawn through the mesorectum.



rd E. Schmidt,
ring and mop-
Notice exten-

Solution No. 1

Aniline chloride (commercial)	100 grams
Sal ammoniac	40 grams
Dissolved in water	650 cubic centimeters

Solution No. 2

Copper sulphate	100 grams
Potassium chlorate	50 grams
Dissolved in water	650 cubic centimeters

it an ebony black.

Natural or cork-colored battleship linoleum is quite satisfactory for tops. It does not stain as much as green or dark red, but it does not have the wearing quality of properly treated wood and will sometimes wrinkle or buckle and make the setting up of small articles difficult.

Under each cock of the clinical tables and hoods, there should be a small lead basin made of 6 pounds lead molded into a wood form. The basin, or a series of them, should be connected to lead-lined iron pipe discharging into and above a half round porcelain or earthenware basin at the end of the table. This basin should be trapped and

connected to the waste pipes and drains. Such an arrangement will satisfy the sanitary requirements and make it possible to keep the counter drain-pipe clean and easily to recover any object inadvertently dropped into the small lead basins.

A stable platform for a balance can be provided by building a reinforced concrete shelf as a bracket of the masonry walls, as shown on the left of the picture of one of the rooms of the Illinois Central Hospital Laboratory.

appearance for a longer time.

Sliding doors in cupboards are convenient and do not obstruct passageways, but they are not

worked to form tight joints and to form sloping tops, the sliding sash should, however, be made of wood held in place by wood stops and balanced by cords and counter-weights or spring balances.

Specimen cabinets should be recessed sufficiently deep into the walls to make their fronts and doors flush with the walls and the mop-boards. Dust-gathering projecting tops will be obviated if

THE VALUE OF POSITION IN THE OPERATIVE TREATMENT OF INGUINAL HERNIA¹

By HENRY H. M. LYLE, M.D., F.A.C.S., NEW YORK CITY
Assistant Professor of Surgery, Cornell Medical College; Attending Surgeon, St. Luke's Hospital

THE object of this paper is to describe a simple procedure which will be found of value in the treatment of inguinal hernia.

For a moment let us rapidly review the muscular and fascial structures which are directly encountered in the repair of an inguinal hernia. Poupart's ligament, formed from the lowest fibers of the external oblique, passes from the anterior superior spine of the ilium to the spine of the pubes. The ligament is curved, with its concavity downward, due to the attachment of the iliac portion of the fascia lata. The degree of curvature and tension of this ligament varies with the position of the limb and body. Extension and eversion of the limb increase the tension; flexion and inversion relax it. The fibers of the external oblique and transversalis that unite to form the conjoint tendon arise respectively from the outer half and the outer third of Poupart's ligament. A relaxation of Poupart's ligament automatically loosens the conjoint tendon and results in an approximation of these structures; the relaxation of the con-

joint tendon in turn relaxes the related portion of the rectus.

For convenience we will divide hernial operations into two stages. The first stage consists of the dissection, high ligation, and fixation of the sac; the second stage consists of the transplantation of the cord and the repair of the inguinal canal. The stage of dissection requires a position which will give exposure and definition to the parts; the stage of repair a position which gives relaxation and allows approximation of the structures. The dissection is carried on with the patient in the customary dorsal position (Figs. 1a and 2). On completion of this stage the patient is placed in a position of relaxation with the limb flexed and rotated inward (Figs. 1b and 3). This relaxes Poupart's ligament and reduces the d joint

in different patients from 20 per cent to 70 per

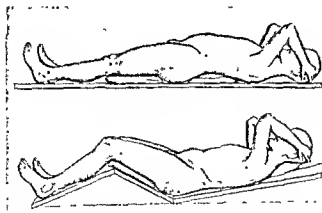


Fig. 1a (above) Position during the stage of dissection and the insertion of the sutures between Poupart's ligament and the conjoint tendon. The requisite of this position is exposure.

Fig. 1b. Position during the stage of repair. Here relaxation is desired. The thigh and knee are flexed and the whole limb rotated inward. This relaxes Poupart's ligament, the conjoint tendon with its component parts, and, to a lesser degree, the rectus. Additional relaxation is obtained by elevating the shoulders. When the maximum physiological relaxation has been obtained the sutures are tied (In the drawing the arms are raised in order to show the operative field; in practice they are by the side.)

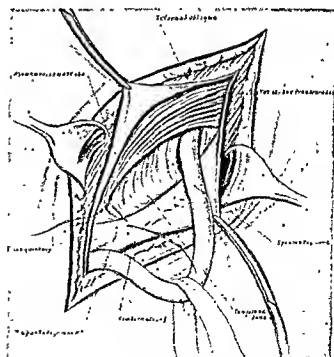


Fig. 2. The stage of dissection is finished and the sutures are being inserted between the conjoint tendon and Poupart's ligament. Note wide gap between the conjoint tendon and Poupart's ligament, and the tension of the internal oblique.

¹Read before the Surgical Section of the New York State Medical Society, New York, March 24, 1920.

MISCELLANEOUS EQUIPMENT

Ventilated closets for the storage of articles which may have an offensive odor are a convenience. Mechanical ventilation should be provided for hoods and if the fans are of sufficient capacity it is better to ventilate the laboratories through the hoods than to provide separate exhaust outlets which might cause a back draft and draw obnoxious fumes and odors across the laboratory. Small-sized fans with the exposed parts coated with lead, to prevent corrosion, can be obtained, and it is probably better to arrange each hood as a separate unit, inasmuch as all of the hoods will not be in use at the same time, than it is to install one large fan, which would have to be in constant operation to ventilate at times only a small portion of the laboratory.

The ventilating pipes from hoods should be built of salt glazed earthenware sewer pipes, sheet iron or galvanized iron would be rapidly destroyed by corrosion.

Inasmuch as the lime or cement mortar in the multitude of joints of a brick shaft are quite easily broken down by laboratory fumes, earthenware pipes which have comparatively few joints are more durable.

Bell and spigot earthenware pipes are more easily erected than plain pipes and several thicknesses of burlap about 2 inches wide should be bound around the spigot end of each pipe and brushed with liquefied asphalt. The burlap should be wound for such a thickness that force will be required to push the spigot into the hub,

after which the remainder of the hub will be filled with liquefied asphalt and wiped out clean on the inside.

Electric current, fuel gas, steam, brine refrigeration, compressed air, vacuum, hot, cold, distilled

Iron and brass pipes are quickly destroyed by laboratory waste; only earthenware and lead or lead-lined iron pipes should be used for waste piping. Ordinary lead pipe sags and will not remain straight. Lead-lined iron pipe is, therefore, more satisfactory. It should be used in connection with lead-lined fittings to provide a continuous lead conduit. The house drain from the street sewer to the bases of the vertical waste pipes should be of salt glazed earthenware and the latter of lead-lined iron pipe.

The steam pressure for an autoclave should have a pressure of about 50 pounds and high pressure water of about the same. The cocks for water, gas, and vacuum outlets should be ground cocks with nipples for hose connections, and steam valves should be high grade disc type valves. It will be a convenience to provide a liberal number of electric plugs on the work benches and high tables, also in the chemical hoods.

Many further details are required for a builder's specification, which would obviously make an article such as this too technical, but the principles set forth will afford a safe point of beginning for the designer.

INFLATION OF THE COLON AS AN AID IN ROENTGEN EXAMINATION

By HERMAN B. PHILIPS, M.D., NEW YORK CITY
Roentgenologist, Hospital for Deformities and Joint Diseases

A PATIENT on the dispensary service of Henry W. Frauenthal, appeared at the clinic suffering from chronic arthritis of the shoulder. In the course of a routine examination, a large tumor, apparently of the left kidney, was noted. It was diagnosed as a hypernephroma, and referred to the X-ray department for further examination.

The roentgenograms resulting from the usual examination of the urinary tract, were unsatisfactory, due to the immense size of the tumor. Its borders blended with the shadows of the spleen, liver, and pelvis, and it was exceedingly difficult to make out the margins of the growth. Oxygen inflation of the peritoneum was thought of but not resorted to because of the reluctance of the patient to stay over in the hospital for a few days, and his absolute refusal to be subjected to any operative procedure no matter how slight.

The following technique was used, a method frequently used in physical examinations, and in roentgen examinations of the bladder, but as far as the author can determine, not described as utilized in roentgen examination of the abdomen proper. The patient was placed on his left side, and a rectal tube inserted into the colon. With a small hand bicycle pump, the colon was slowly and gradually distended to the degree of slight discomfort, when the tube was withdrawn. The roentgen examination was then repeated with very gratifying results. The distended and slightly displaced colon offered a contrasting background, which clearly outlined the tumor, as well as the other solid abdominal viscera.



Roentgenogram of hypernephroma after inflation of colon with air

This method certainly does not offer as universal an application as oxygen inflation of the peritoneum, however its expedience, freedom from dangers and inconveniences, makes the author feel justified in submitting it to the profession at large.

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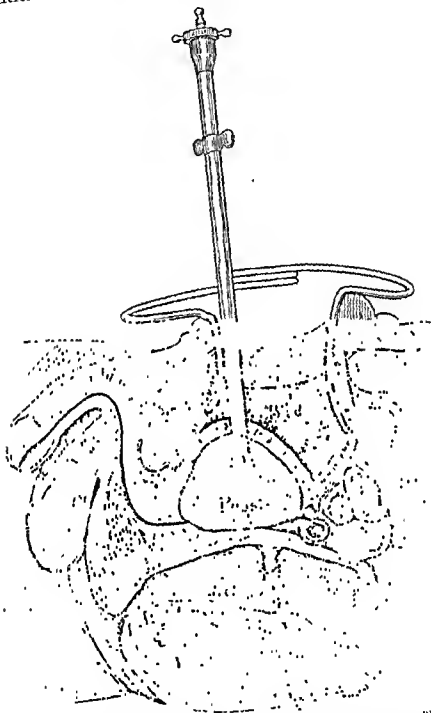


Fig. 2. Sagittal section showing suprapubic prostatic retractor (open) in use. (Note elevation of prostate.)

taking hold in the gland tissue, by turning the circular top of the instrument.

The accompanying illustrations (Fig. 1 and Fig. 2) demonstrate clearly the *modus operandi* of the retractor. With it in place, the prostate may be elevated to any degree that is compatible with its mobility, and the enucleation can be made largely under direct vision. Scissors dissection, done directly under the eye, may be

advantageously used to expose one-half or two-thirds of the gland, after which the remaining portion may be freed by the enucleating finger. Further experience may show that the prongs of the instrument may need to be modified as regards their size and shape. However, the first model has proved very satisfactory in my hands and has greatly facilitated my operations which have been done entirely under local anaesthesia.

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CORRESPONDENCE

TRACHELOPLASTY FOR CHRONIC ENDOCERVICITIS

To the Editor: Dr. H. Koster, of Brooklyn, N. Y., in a letter appearing in the September issue, comments as follows. "Theoretically, tracheloplasty as advocated and practiced by Sturmorf would seem to be the logical form of treatment;" but, "clinical evidence substantiates the experimental indications that the operation does not do what is claimed for it, for many cases followed at the Polhemus Memorial Clinic, even after long continued postoperative local treatment, continue to have symptoms referable only to the continued presence of chronic endocervicitis and the accompanying cellular tissue inflammation."

In my book on *Gynoplastic Technology*, to which Dr. Koster refers, I insist upon the radical enucleation of the "entire endocervical mucosa from the external to the internal os." If Dr. Koster subjected his patients to such a radical enucleation, how can he substantiate a "continued presence of chronic endocervicitis in many cases"; surely there can be no endocervicitis in the absence of endocervical tissue.

Here lies the crux of the whole procedure. Furthermore, presuming that Dr. Koster did remove the entire endocervical mucosa and secured a union of the inverted cylindrical vaginal flap, to what tissue did he apply the "long-continued postoperative treatment"?

Dr. Koster bases the "clinical evidence" of his failure to cure, as well as his statement that "the operation does not do what is claimed for it" upon the following "experimental indications."

"In undoubted cases of chronic endocervicitis, after having removed a cone-shaped wedge contain-

ing the endocervical mucosa after the technique of Sturmorf, a piece of tissue from the new canal wall was excised, before relining with the mobilized vaginal cuff. This, upon section and staining, showed glandular elements and surrounding inflammatory reaction similar to the tissue removed in the cone-shaped wedge. Repeated confirmation of the results strongly suggests that (a) a mere removal of the endocervical mucosa does not remove all the infective material; (b) that it is impossible to determine, macroscopically, the limiting point of extension of infection in the direction of, and into the cervical musculature; and (c) that in some instances it is impossible to remove all the infective material without the musculature in which it is embedded."

Dr. Koster's observation that the tissues of the new canal wall show "surrounding inflammatory reaction similar to the tissue removed in the cone-shaped wedge," is perfectly correct and may be found fully illustrated in the chapter on "Endocervical Pathology" of my book, but his deductions are entirely superficial and fallacious.

It is a general surgical axiom: eradicate the infectious focus and the concomitant tissue reactions will eradicate themselves. I do not claim 100 per cent cures, but my experience during a period of over ten years in public and private service, corroborated by that of many operators in different centers, all tends to controvert Dr. Koster's conclusions.

New York City. ARNOLD STURMORF, M.D.

lemic upon the infections in to restate the

VIENNA PHYSICIANS DESTITUTE

Vienna I couldn't help feeling that I was living in a morgue. Beautiful streets, a beautiful opera house and the city beautifully kept—but nothing doing."

Viennese physicians are in desperate straits. Their work must go on at all events, in an effort to combat the increasing mortality and alleviate the many ills of an undernourished population. But they cannot feed their little children with the scanty government ration, even when supplemented with their pitifully meager incomes.

The American Relief Committee for Sufferers in Austria, of which Hon. Frederic C. Penfield, late American Ambassador to Austria-Hungary is honorary chairman, has created a special fund for the relief of destitute Viennese physicians and surgeons.

Contributions may be made to Alvin W. Krech, President, Equitable Trust Company, 37 Wall Street, New York City, Treasurer of the Committee.

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at another scientific session in the Rose Ballroom, addresses were delivered on "Organization for Better Surgery" by Dr. Franklin H. Martin, and on "Compound Fractures of the Femur" by Dr. Frederic A. Besley.

Sunday, September 12, was spent in a most delightful all-day trip over the Columbia River Highway.

WASHINGTON

Seattle acted as host for the first annual session of the Washington State Sectional Clinical Congress, which was held September 13, 14, and 15. Monday, September 13, was devoted to registering the invited guests and taking them for drives about the city. In the evening a dinner was given at the Seattle Yacht Club. The morning of September 14 was given over entirely to a discussion of the subject of goiter. At the City Hospital, Dr. John Hunt discussed the anatomy, Dr. Roscoe Mosiman, the pathology; and Dr. J. M. J. Blackford, the diagnosis of goiter.

At 2:30 p.m., September 14, at the meeting open to the public, Park Weed Willis, chairman, executive committee, presided. Besides talks by the speakers who had addressed the session

session held at the New Washington Hotel, in a symposium on "Gastric and Duodenal Ulcer," Dr. J. F. Griggs, of Tacoma, spoke on the "Diagnosis"; Dr. W. H. Stutsman, of Seattle, on the "Medical Treatment"; and Dr. R. A. McKechnie, of Vancouver, B. C., on the "Surgical Treatment of Gastric and Duodenal Ulcer." Dr. Frederic A. Besley read a paper on "Compound Fractures of the Femur"; and Dr. Franklin H. Martin, on "Organization for Better Surgery."

The morning of September 15, was devoted to a discussion of the subject of bone surgery. At 12:00 a.m. clinics were held at the various hospitals, followed by a general discussion of the day's work on bone surgery.

The afternoon was given over to a discussion of hospital standardization in the state of Washington.

PENNSYLVANIA

The first annual session of the Pennsylvania State Clinical Section was held in Pittsburgh, October 7, 8, and 9, with headquarters at the William Penn Hotel. One hundred and twenty clinicians in thirteen different hospitals participated in an extensive and varied clinical pro-

gram which filled the morning and early afternoon hours of October 8 and 9. The first scientific meeting was held Thursday evening, October 7, in the Ballroom of the William Penn Hotel. Dr. Edward Martin, chairman of the executive committee, delivered the opening address. Hospital standardization was discussed in addresses by Dr. Franklin H. Martin; Rev. C. B. Moulinier, regent, Marquette University, Milwaukee; Dr. John B. Roberts, Philadelphia; Dr. J. M. Baldy, Philadelphia; and Mr. John G. Bowman, Chicago.

On Friday afternoon at 3 p.m. more than 1,500 people assembled in the ballroom of the William Penn Hotel at the meeting open to the laity and listened to talks by Dr. Franklin H. Martin on "The American College of Surgeons"; Dr. W. L. Estes, of South Bethlehem, Pennsylvania, and Dr. Donald Guthrie, of Sayre, Pennsylvania, on "Conservation of Life and Function from a Surgical Standpoint"; Dr. Charles Davison and Dr. Emil Beck, of Chicago, and Dr. Frank L. Hupp, of Wheeling, West Virginia, on "Prevention of Cancer Mortality"; and Mr. John G. Bowman on "Laymen's Aid in Standardization of Hospitals."

In the evening of Friday, October 8, addresses were delivered by Dr. Chevalier Jackson, of Philadelphia, on "Foreign Bodies in Air Passages and Esophagus"; Dr. Charles Davison, of Chicago, on "Limitations of Bone Transplantation in Recent Fractures"; and Dr. Emil Beck, of Chicago, on the "Skin-sliding Operation in Chronic Osteomyelitis and Empyema, and Bismuth Paste Treatment."

EXECUTIVE COMMITTEES APPOINTED

In each of the five states in which the first annual session of the State Clinical Sections has been held, executive committees were elected and a place chosen for the next meeting.

Great Falls was agreed upon for the next meeting of the Montana section and the following were chosen as members of the executive committee:

Chairman, Dr. Frederick E. Atter, Lewistown.

Pocatello was selected for the next meeting of the Idaho section and the following committee appointed:

Chairman, E. E. Maxey, Boise.
Secretary, E. F. Howard, Pocatello.
Counselor, C. M. Cline, Idaho Falls.

Power, D.: The After-Treatment of Some Surgical Cases. *Practitioner*, 1920, cv, 1

Power deals with the after-treatment of surgical

or mustache. The taste may be reduced by means of a mouth wash of carbolate of soda (phenol, 8 parts, caustic soda, $3\frac{1}{2}$ parts, distilled water, 88 $\frac{1}{2}$ parts diluted ten or twenty times) or a mixture of 6 gr of phenol and 5 gr of citric acid to an ounce of eau-de-Cologne diluted to 2 oz with warm water. Severe vomiting may be controlled by giving sips of hot water or, in more severe cases, hot water containing 15 gr of soda bicarbonate. This will afford relief even though it may be vomited immediately. At times nothing should be given by mouth. In

times after prolonged vomiting it may be better to give solid food instead of liquids.

Pain. The pain usually felt after an operation is due to gas rather than to the operative wound. One-hundredth of a grain of hyosine hydrobromide may be given before the operation or $\frac{1}{4}$ gr of morphine before the patient leaves the table. The dressings and the wound should always be carefully examined whenever pain is present. In most cases 15 gr of aspirin will be sufficient to afford relief. The same dose may be repeated in four hours. Because of its masking effect, the author does not give morphine unless it is absolutely necessary. When it is indicated, however, he gives $\frac{1}{2}$ gr. in one dose, believing this better than two doses of $\frac{1}{4}$ gr.

Drainage. If a drainage tube is employed it should be sufficiently large so that it will not become blocked by secretions. When the wound is expected to heal by first intention, the tube should be removed at the end of twenty-four or forty-eight

through which it passed should be treated in the same manner as the rest of the wound.

Purgatives. The aperient of choice is castor oil (6 to 8 dr) supplemented, when necessary, by a soap and water enema. When the patient objects to oil, 2 or 3 gr of calomel with $\frac{1}{2}$ gr of powdered opium may be given to prevent griping, or 1 gr. of calomel hourly for five hours if necessary. White mixture is the most satisfactory routine aperient during convalescence.

Sutures. Sutures are usually removed seven days after their insertion, but in lesions of the face they should be taken out on the third or fourth day, and in cases of intussusception, between the tenth and

the fourteenth days. They should be removed with great care in order that the scar may not be put to undue tension. Silkworm-gut and horsehair are the suture materials most frequently employed.

Food. Milk is a solid rather than a liquid and therefore should be used with discretion. If necessary it should be predigested. Milk is not a satisfactory food after operations for hare-lip or cleft palate unless care is taken to cleanse the mouth

should be given every half hour for three hours, and then 1 oz. or a little weak tea every hour for three hours. The quantity may then be increased to 5 oz. every four hours. At this time essence of glucose or similar foods may be substituted. The principle

IRWIN W. DASH

Hammer, A. W.: Vomiting from a Surgical View-point. *N. York M. J.*, 1920, cxii, 64

Hammer considers vomiting an important symptom in the syndrome of many of the major surgical maladies. He discusses it first in connection with acute or chronic cerebral lesions. Vomiting due to cerebral conditions may occur when digestion is at its height and closely simulate a case of indigestion, as in a sudden apoplectic seizure. When sudden vomiting with or without nausea occurs in a middle-aged person or a patient of advanced age and there is no evidence of gastric involvement, the emesis being painless and the ejected matter composed of mucus or a watery fluid, the possibility that cerebral hæmorrhage is a causative factor should be considered.

Vomiting is frequently associated with exophthalmic goiter and in such cases is believed to be partly of nervous origin. Intractable vomiting occurs frequently in biliary colic and often no other symptom save epigastric pain is present during the first twenty-four or forty-eight hours.

The primary nausea and vomiting of acute appendicitis is reflex in character and manifested early in the disease. Almost invariably it is the second symptom, pain being the first. It is the result of an overdistended condition of the appendix caused by the retention of infected matter in that portion of the gut. Secondary nausea and often projectile

absorption, putrefactive changes occur and the bowels become overdistended with gas. As a result of reversed peristalsis, which represents an effort on the part of the bowels to overcome the distention,

HOSPITAL LABORATORIES

BY WILLIAM S. PETERSEN, M.D., AND RICHARD E. SCHMIDT, F.A.I.A., CHICAGO

DURING recent years, the hospital has materially widened its scope, and today instead of being merely a nursing establishment, it is, in many instances, a center for the study of work and which th fully to develop its usefulness to the community and to the physician. The great continental hos-

surgical progress which was ushered in with the early eighties. With the impoverishment of Europe, however, medical science turns more and more to America to take up and extend the work already begun. How well we will accomplish the task before us will depend largely on co-operation, equipment, and willingness fully to develop the opportunities before us. This is a responsibility which cannot be ignored. Just as we lead in the physical equipment of the hospital for the care of the patient from the nursing standpoint, so we can lead in developing the clinical sciences and the theory of medicine if we devote only a fraction of the time and the money that has heretofore been used in mere routine, the static function of the hospital.

DEMAND FOR MODERNIZATION OF LABORATORIES

Of the many demands constantly brought before the hospital management, few are so imperative, few so insistently advocated by active attending physicians, as the modernizing of the laboratory unit. Several well-defined causes underlie this demand, all of which have been accentuated during the past five years. Briefly these are as follows: The greater appreciation by the physician himself that the laboratory is a useful and serviceable instrument in diagnosis and the follow-up of treatment. The younger generation of physicians, trained to demand laboratory aid, is gradually making its influence felt in hospital management. Active service in the Army, too, gave many c opportunity modern clinical laboratory procedures; on their return to civil practice their experience has made them insistent on a modern laboratory service.

In other instances the prestige of a modern laboratory in the hospital, the possibility of adding to the hospital income by the fees from a well-conducted laboratory, or the pressure of standardization committees, may be the salient factors. Most important of all, however, is the fact that laboratory work itself and the requisite equipment has taken on a new character and scope. Today a well-equipped biochemical laboratory is an absolute essential, not merely to carry out the former routine urine analysis but to do the blood chemical work, to make proper metabolic studies—basal metabolism—nitrogen and carbohydrate balances,—as well as to correlate the work of the serological, pathological, and bacteriological laboratories.

THE SCOPE OF THE NECESSARY CHANGES

The usual conception of modernization as concerns the laboratory refers to the provision of increased space or the securing of proper equipment. But the mere physical improvement is, of course, inadequate if the proper organization is lacking, and even the organization may prove sterile unless a wholesome spirit of investigation and research pervades the entire personnel. Not that research, in the current conception of the term, should be the chief function of the laboratory of the hospital. By no means. But unless the unusual problems that constantly arise in the hospital be met from an investigative point of view, the work of the laboratory invariably sinks to the level of shop routine.

To function properly three or four separate laboratories should be established: pathology, bacteriology, biochemistry and serology (the latter can with advantage be placed as a subdepartment of any of the first three), and well-trained physicians should be placed in charge. These departments, grouped as a department of laboratories, should be under the direction of a single chief with sufficiently wide training to be able properly to inspire the work of his subordinates. The internes of the hospital should be given a rotating service in the laboratories, primarily to familiarize them with the technique, secondarily to assist in the investigation of extra-routine matters coming to the laboratory. One of the great weaknesses of the American laboratory has been the lack of well-trained technicians

Evacuation Hospital No. 114 in France. The method was developed by French surgeons earlier in the war than by American surgeons.

ospital
2) the

usually a total waste for the rest of the operating team. A quicker anæsthetic would greatly increase the surgical output of the team and incoming patients would receive treatment earlier. Many patients came to operation soon after eating, and distressing and dangerous vomiting was a frequent result of anæsthetization by ether. Moreover, many of the wounded suffered from "colds," tonsillitis, bronchitis, and influenza. Another objection to the use of ether was the fact that following anæsthesia induced by this agent the patient was obliged to occupy a hospital bed a certain length of time before he could be evacuated — an important factor when the number of incoming wounded patients

rubberized cloth is quickly fastened over the face with a puckering string and the patient directed to breathe. A small opening in the center of the mask admits air as needed.

Unconsciousness comes quickly and the operation is begun within one minute. There is no waiting between operations. The anæsthesia from the dose given lasts from fifteen to twenty minutes but may be prolonged by changing to ether. After the removal of the mask the patient wakes up promptly. Most patients who had walked to the operating table walked away from it after a ten or fifteen minute operation. There is no mucus in the throat and seldom any nausea. Emesis, if it occurs at all, comes after the operation.

There was no death from the anæsthesia, no syncope, and rarely any cyanosis. Struggling occurred occasionally at the beginning of anæsthesia but was never serious.

abdomen

The method is worthy of consideration in civil emergency surgery.

SURGICAL INSTRUMENTS AND APPARATUS

Brunner, A.: Low Pressure Breathing in Practical Surgery (Die Unterdruckatmung im Dienste der praktischen Chirurgie). *Deutsche Ztschr. f. Chir.*, 1920, clu, 107.

The author describes an apparatus with which it is possible to lower the intrathoracic pressure gradually. Because of the increased flow of blood to the thorax during inspiration the respiratory blood pressure variations during respiration are much greater with low pressure than with atmospheric pressure. During low pressure breathing the arterial pressure is raised whereas during high pressure breathing it sinks. By low pressure breathing is meant a decreased pressure within the respiratory area with atmospheric pressure on the surface of the body. Experiments have shown that parenchymatous bleeding practically stops with low pressure breathing.

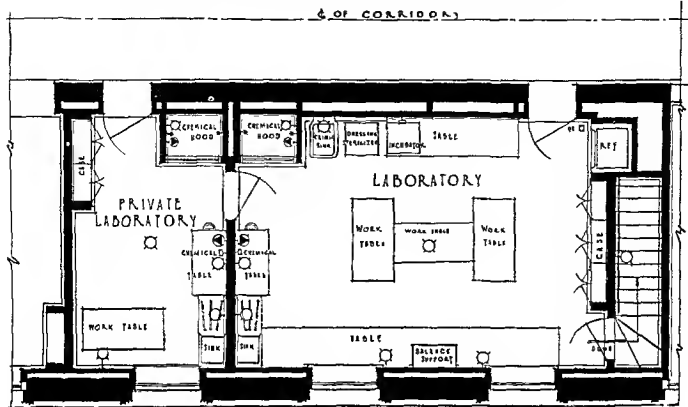
A drawback to the use of the method is the danger of air embolism. Operations upon the skull, in the region of the large veins of the neck, or any area where veins cannot collapse are therefore contraindicated under low pressure breathing. If the larger vessels are ligated the danger of hæmorrhage

the decrease in the size of the chest cavity an enlargement equal in capacity to 1 liter occurs in the abdominal cavity. This increased amount of space may be of considerable value for the replacement of the bowels during an operation for ileus. As a result of the lower pressure above, a part of the gases from the abdominal organs will escape by way of the pharynx. Therefore, small amounts of gas may be aspirated during anæsthesia. To prevent this the patient should be placed in the Trendelenburg position. FRANKENHEIM (Z).

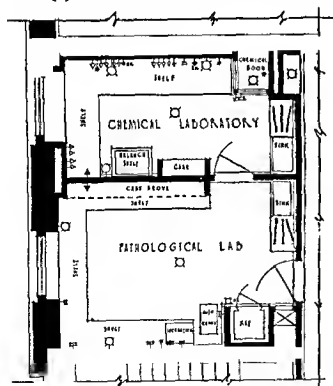
Marshall, H. W.: A Ready-To-Wear Brace for Strained Muscles and Ligaments. *Boston M. & S. J.*, 1920, clxxviii, 93.

In a short article the author explains the advantage of having braces ready to wear directly after an injury. The pathology which takes place in a torn muscle or ligament is well considered and described. The advantages of early treatment with a proper mechanical appliance which immobilizes the parts but can be removed for massage, exercise and external applications before serious changes have taken place in muscles and ligaments are discussed.

Ready-to-wear braces are especially valuable in cases of low spinal injuries and are preferable to plaster, adhesive strapping, abdominal supports,



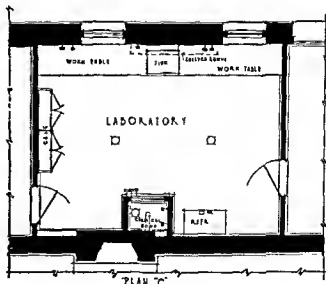
Plan A. Laboratory of the Illinois Central Hospital, Chicago. Note the stairway to basement supply room and autopsy room.



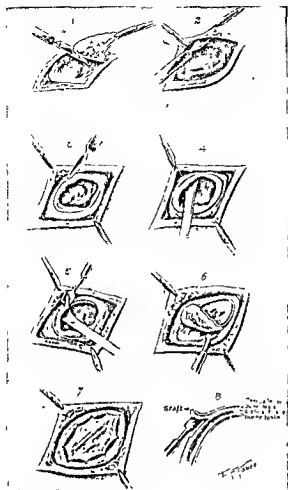
Plan B. Laboratory of the Columbia Hospital, Mil-.

The following symbols apply to all plans:

- | | |
|----------------------|--------------------------|
| ⊙ Ceiling outlet. | ✱ Gas outlet (wall). |
| ⊠ Bracket outlet. | ⊞ Wall receptacle outlet |
| ⊕ Wall power outlet. | ⊞ Vacuum outlet. |



Plan C. Laboratory of Southern Baptist Sanatorium, El Paso, Texas. (Richard E. Schmidt, Garden & Martin, architects.)



1. Free of dura mater defect
2. Removal of the transplant from the parietal eminence. The size and shape of the transplant have been modeled by a rubber dam and the graft has been cut to fit accurately
3. Graft partly sutured by uniting the pericranium of the graft with that surrounding the defect
4. Cross section of graft

After structural changes had taken place, cranioplasty did not appreciably improve the symptoms. Cranioplasty was done to protect the brain and relieve the deformity.

In defects of moderate size without intracranial tension the defect receded when the head was higher

than the rest of the body and protruded when the patient was recumbent or stooping. The symptoms were most pronounced when the patient was lying down.

The method of cranioplasty employed in these cases was that used by Frazier. The scar tissue was removed by incision which followed the old scar, and the dura was freed from the bony rim with care not to open the dura. A pattern of the defect having been made and outlined on the parietal eminence with a fine chisel, a thin lamina of the outer table with the overlying pericranium was removed. The transplant was placed over the defect, with the bony surface down, and held by fine interrupted catgut sutures. The patient was kept flat in bed for two weeks.

ISADORE E. BISKAMP

Sachs, E.: A Review of Eight Years' Experience with Brain Tumors. *Arch Surg*, 1920, 1, 74

The highest mortality due to brain tumors, about 35 per cent, occurs in cases of glioma. This type of case may be characterized chiefly or entirely by focal symptoms, general signs of pressure being absent even though the tumor may be large. In spite of the absence of pressure symptoms, however, a diagnosis of brain tumor is possible. Early operation is most important.

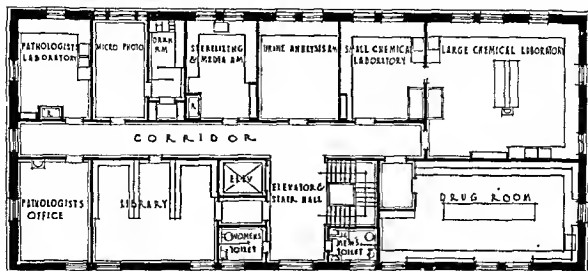
Gliomata are frequently regarded as malignant tumors. This is not correct. One of the chief characteristics of a malignant tumor is its power to form metastases, a power which the glioma does not possess. In cases of brain tumor palliative measures should not be continued for more than four weeks, and every brain tumor should be treated on the assumption that it may be a glioma and requires hospital care.

Gliomata differ from other brain tumors in three respects: (1) their growth is more rapid, (2) they are very soft in consistency; and (3) they are not encapsulated.

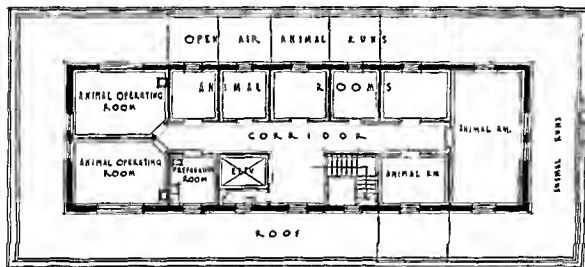
The brain is much more deformed by gliomata than by other types of tumors. When a tumor causing such deformity is removed, the sudden release of pressure results in marked edema due to the filling up of the space by the compressed brain, and this edema may throw out of function brain centers some distance from the tumor and cause death. Therefore before such a tumor is removed an

sure is markedly increased is an unwise and almost impossible procedure. A preliminary decompression helps to reduce the pressure, but the dura should not be opened until the intracranial pressure has been brought down to, or slightly below normal. This reduction may be effected by withdrawing the fluid from the opposite ventricle by lumbar puncture and is evidenced by a reduction in the tenseness of the dura.

HOWARD A. MCKNIGHT.



Plan D, second floor.



Plan D, third floor.

Bacteriology. Centrifuges; microscopes; (dark field, mechanical, stage, warm stage, lamp); water baths; animal cages (mouse jars, etc.); animal boards, sterilizer (autoclave—Arnold—apparatus; te mortars; etles, funnels, etc.; wire baskets; meat grinders; etc.; ball mill pipette boxes

Pathology. Centrifuge; microscopes; mechanical stage—lamps, microtomes; paraffin ovens; animal boards; autopsy outfit; freezing apparatus; section lifters; slide boxes; specimen jars.

Additional equipment for research or biochemical
etc.); combustion furnace; surgical instruments;

sterilizer; scale (animal) and weights; stalogrameter; ultramicrometer; press; spectroscope.

LOCATION

The laboratory must be located so that it will be convenient to the staff, and to the various services of the hospital with which it must be constantly in touch, and often very quickly. This is usually a difficult problem and every requirement cannot always be met, so that it is necessary to co-ordinate the location with the more important functions and put up with some arrangements which will mean the least number of inconveniences. Obviously a laboratory should be placed where its staff will be disturbed the least by curious visitors, excessive noise, and other annoyances, and every condition favorable to study and observation should be provided.

glands are unquestionably involved, radical removal of all the superficial and deep glands up both sides of the neck is done one week later.

Lesions inside the oral cavity have not yielded so well to radium. Radium therapy is the treatment of choice for leukoplakias which are just passing into the malignant type of lesion. Warty growths within the mouth respond readily to radium rays. For technical reasons, however, the results have not been so good in the treatment of ulcerated carcinoma.

Among the following radium treatments, the use of good methods is clearly indicated in some conditions such as those in which the bones of the jaw or face are involved. The part of the bone involved by the growth should be removed and the radium buried in the wound to destroy any remaining cancer cells. This method is especially effective when there is involvement of the sinuses.

The author's conclusions are as follows:

1. Radium may be relied on to heal carcinomatous ulcers of the face.
2. Radium therapy is the most efficient method of treating carcinoma of the maxilla.

removed by open operation.

4. The initial dose of radium should be the maximum dose deemed necessary for the complete destruction of the carcinoma.

5. The persistent use of radiation after it has been demonstrated that a growth fails to respond to it favorably is to be condemned.

6. Radium has limited use in carcinoma of the jaws and buccal cavity.

7. As an adjunct to surgery, radium is probably of very great value as its small bulk and diffuse and powerful action make it possible to implant it in small cavities which are inaccessible to any other method of approach. W. L. Brown

Ivy, R. H., *Maxillofacial Surgery of the War as Applied to Civil Practice*. Dental Cosmos, 1920, LXII, 825.

The author discusses the treatment of cases on his service at the Walter Reed Hospital, Washington, D. C., describing first the treatment of unwanted fractures of the mandible due to loss of substance. Three methods which were used most frequently are:

1. Cole's method in which a pedicle taken from the mandible itself is employed.

2. Delezenier's osteoperiosteal graft method in which a thin shaving of bone with its periosteum is removed from the tibia and inserted in the breach.

occlusion of the teeth, and the parts rendered free from sepsis. A case is cited in which the entire half of the lower jaw was removed and the defect was closed by a flap of skin and muscle from the neck while the

right side was taken care of by an extension from the lower splint which restored the lost teeth and alveolar process. An osteoperiosteal graft from the tibia 10 cm long and 2 cm wide was embedded in the soft tissues of the right cheek at about the site of the lower jaw, and the depression in the face was filled with subcutaneous fat obtained from the abdominal wall. Radiograms made several months after operation showed considerable bone formation in the right mandibular region.

In addition, a case is described in which splints connected with springs were adjusted and a jackscrew so arranged that the springs exerted a continuous pressure separating the jaws and it was possible to

Waldron, Gillies, and their colleagues during the war to overcome limitation of motion of the lower jaw and lips due to adhesions to the alveolar processes. For the correction of depressions in the surface of the face caused by injury or disease the author prefers the use of fascia lata instead of abdominal fat.

A method of restoring the nose is described in which costal cartilage is implanted in the skin of the forehead, later transformed into a pedicled flap, and then sutured into the freshened edges of the nasal defect.

To restore the ears costal cartilage is cut to the proper shape and buried beneath the skin of the scalp immediately beside the defect. Two weeks

surgery, massage, electrotherapy, X-ray treatment, and possibly the use of radium. Louis SCHULTZ.

Chubb, G., *Bone-Grafting of the Fractured Mandible, with an Account of 60 Cases*. *Lancet*, 1920, CCIII, 0.

This article is an account of 60 consecutive and unselected cases of fracture of the mandible, all but 3 due to gunshot injuries, which were repaired by means of bone grafts. Non-union resulted in 4 cases because of sepsis, in 2 cases because of erysipelas, and in 1 case because of a discharging ear. Firm bony union was obtained in the remaining 56 cases in from one to four months.

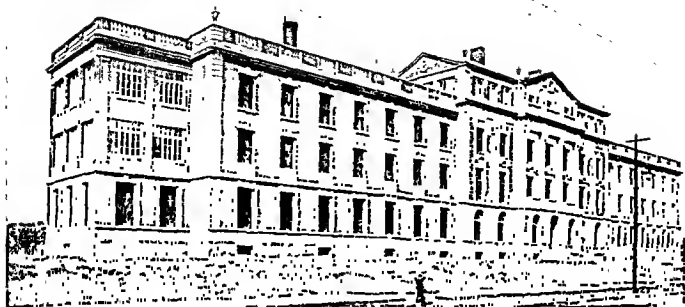


Fig. 1 Illinois Central Hospital, Chicago (Richard L. Schmidt, Garden & Martin, architects) The laboratory is in the first story midway between central entrance and the left hand end.

grain is open, shellacked and varnished to show the grain.

On account of its hardness, maple is the best material for the top; white wood is softer but takes a stain with more facility.

The design of the furniture should be as plain as possible to require the least amount of labor to keep it clean. Moldings, recessed panels, and unnecessary ledges to gather dust should be omitted. Flush panel or veneered doors conform to this class of work.

It is a good plan to build bases or pedestals of impervious materials for all of the furniture. These bases should be of the same height and material as the base, or mop-board of the room. The core of concealed portion should be made of cement concrete. Washing and scrubbing soon destroys varnish, and impervious bases such as these resist scrubbing and marring by footwear.

It is rare that two persons agree on the proper height for a work bench. It seems necessary to select an average height and equip the laboratory with revolving top stools. There is a gain in steadiness to the hand and eye if both feet of the worker can rest on the floor and not on the rungs of a stool.

Projecting cupboards and counters, 2 or 3 inches beyond the bases, adds much to the comfort of the worker while standing close to them.

Inasmuch as the best heating results can be obtained by placing radiators under the windows and as work benches must also be placed in these positions, a special arrangement is required to prevent heated air from welling out from under the work benches against the worker. This consists of arranging an opening in the top of the bench adjacent to the window, over the radiator, and attaching a metal apron to the underside of the counter in front of the radiator, and extending downward within 10 or 12 inches of the floor. Obviously the apron must be arranged for easy removal to facilitate cleaning the radiator and the space around it. The opening in the top of the counter should be surrounded by a low stand-

should be built up of $1\frac{3}{4}$ by 3-inch hard maple strips doweled together with $\frac{1}{4}$ -inch rods from front to back, countersunk at the front for the reception of washers, nuts, and plugging. Wood seems to be the most desirable material for tops for less glassware is broken than if soapstone or other hard material is used. Inasmuch as untreated wood is stained and charred by chemicals, the best finish is a treatment which will blacken it. An excellent recipe for obtaining this end is the following:

recurring infections, the metabolic stimuli are due to tissue activity incident to adolescence, menstruation, etc., and the psychic stimuli are the result of conscious or unconscious emotions.

The author decries the promiscuous use of iodides in the treatment of goiters, claiming that they are apt to set up toxic symptoms and a condition which is fatal.

If adenomata are not removed surgically they are apt to degenerate and cause toxic symptoms

RALPH B. BETTMAN

Lahey, F. H. The Diagnosis and Management of Intrathoracic Goiters. *J Am M Ass.* 1920, lxxv, 163

Concealed thyroid growths are of two types, namely,

1. Those which are completely intrathoracic, no

cysts of the thyroid

2. Those which are incompletely intrathoracic, the major portion of the goiter being on the neck

ous degrees of respiratory obstruction dependent upon its progressive growth. Many cases of this type are treated for asthma.

A roentgen-ray examination demonstrates the substernal shadow to be continuous above as a distinct widening of the upper sternal shadow. A feature of even greater diagnostic value is the bowing or deviation of the trachea. This takes place when the adenoma or cyst grows from one side. When the growth is bilateral the trachea is not deviated, but is collapsed from before backward.

A late involvement of the recurrent laryngeal nerves, evidenced by the late development of huskiness of the voice when the tumor has been present

denting of the trachea from pressure may be demonstrated. Not only in the concealed, but also in the incompletely intrathoracic type has this measure been helpful in demonstrating pressure.

The most essential single feature in the operative procedure is the removal of the intrathoracic mass as a whole. Piecemeal delivery is to be avoided because of the almost uncontrollable deep bleeding which occurs if the tumor is broken up while still within the chest. The dissection must be effected by gently sweeping the fingers around the tumor within the lines of cleavage. The mass must not be dragged out from above, but should be pried out by pressure from below. In some cases it may be necessary to split the sternum.

HOWARD A. MCKNIGHT.

Mas - - - - -

The author states that when goiters were first treated surgically poor judgment was shown by not operating on a few extremely ill patients because they had had hearts. He now regards no patient with a toxic adenoma as too poor a risk to put at rest under observation with a view to thyroidectomy.

As recurrence of goiter and toxic symptoms seem to indicate that we have occasionally removed too little of the thyroid, the present tendency is to remove more rather than less.

With few exceptions, exophthalmic goiter runs a typical course. The typical case shows a slight thyroid enlargement with mild toxic symptoms for several months. These symptoms gradually increase until about the eighth month, when they become markedly worse. During the ninth month an explosion of symptoms, commonly known as a crisis, occurs. This is followed by a period of improvement with fairly constant symptoms. At about the end of the second year a second crisis develops which, however, is never quite so severe from the standpoint of toxicity as the first. After this there are ups and downs until after a period of years the toxicity of the goiter wears out and occasionally a cure results.

mitted to become extremely poor ones because temporary improvement generally results if the

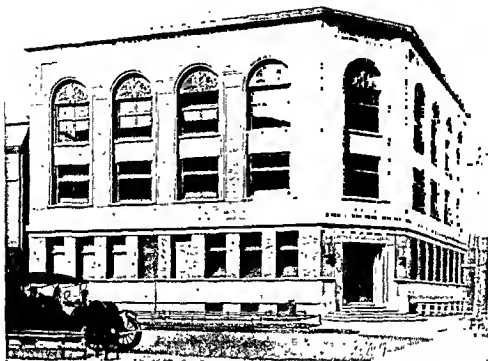
who is carried to, and then through, the crisis by medical treatment and is not operated upon until later.

Lack of judgment as to the best time for interfer-

to do too much in extremely bad cases.

In extremely serious cases ligation of the superior thyroid artery or injection of boiling water does not give the results to be desired and the reactions are sometimes severe. Actual cauterization of the gland approaches perfect surgical cure. It is simple and painless and can be performed without the patient's being conscious of what is going on. The reaction is negligible, and the results have been excellent.

Local anesthesia is begun by pressure applied for thirty seconds to the point chosen for the first needle puncture by means of a cotton applicator frozen solid with ethyl chloride. Careful infiltration with procaine is then done and an incision 2 cm. long is made just to the inner side of the sternomastoid muscle, in the line where the thyroidectomy in-



windows.

this arrangement is used; otherwise tops sloping at an angle of 45 degrees or more should be built. Walls are not always thick enough for deep recesses but the faces of walls and partitions can be advanced or thickened by the use of furring tile.

Specimen cabinets which pass through a wall with doors on both sides are very useful. Hospital attendants can deliver specimens to the laboratory or call for reports without disturbing the staff during working hours, or in the night or hours when there is no one in the laboratory. The doors on the corridor side and laboratory side are numbered or labeled to correspond with the several stations or services of the hospital.

Small animal cages should be portable and made of metal. Large cages should be hinged together so that they can be readily taken apart for cleaning. These cages should be equipped with rollers or casters so that they can be rolled out from the wall and examined and cleaned on all sides.

The floors and walls around the cages should be made of impervious material and floor drains provided to permit thorough and frequent flushing.

WALLS

The walls should be wainscoted about $5\frac{1}{2}$ or 6 feet high with large tile or salt glazed split brick to remain permanently in a good condition and require a minimum of labor cost for maintenance. Paint and plaster are affected by water and acids, deteriorate quite rapidly and require constant patching and painting.

FLOORS

A resilient flooring material, which will not stain is desirable; battleship linoleum, mastic and asphaltum floors have that quality, but, the first is easily stained, the second is affected by certain oils and greases, and the third is impossible to maintain in a presentable condition, at least to continue to have a good clean appearance.

Now and then an attendant insists on a soft floor, claiming that it is too tiresome to work on a hard floor, but many of the best laboratories have artificial marble or terrazzo floors, which are hard, but which are not easily stained or damaged, and are low priced. Vitrified tile stains the least and affords the best appearance. Cork mats can be provided for use in places where much standing is required.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Wessler, H.: The Diagnosis of Encapsulated Pleural Effusions. *Med Clin N Am*, 1920, IV, 69

In an inflammatory process in the pleura adhesions will be most apt to form in the regions in which the movement of the lung and chest wall are restricted. Transudates are rarely sacculated, exudates frequently. Another element which may determine the localization of a pleural effusion is the presence of an inflammatory focus at the surface of the lung, the slow extension of which to the

four
the
(2)
the

diaphragm, (3) effusions encapsulated between the lung and the mediastinum, and (4) interlobar effusions.

The most common type of effusion is situated in the axillary portion of the chest. In cases of atypical effusions it is advisable to aspirate in the axilla. The signs of pleural effusion often closely resemble those of consolidation, particularly in children.

In distinguishing an upper lobe effusion from pneumonia, the development of an area of dullness or flatness in the axilla, especially when it increases from day to day, is important. The roentgen plate is also of diagnostic value.

A primary encapsulated effusion in the mesial portion of the chest near the mediastinum is perhaps the rarest form.

Multilocular effusions which may or may not communicate with each other must be watched for. They do not necessarily develop simultaneously and therefore the character of their contents may vary.

A superficial lung abscess may be the cause of a purulent or a non purulent pleurisy in its immediate vicinity.

effusion
These

serous and ultimately absorb, so that they remain latent throughout their course.

2 Pulmonary tuberculosis. Pulmonary tuberculosis is a frequent cause, especially in children.

3 Idiopathic conditions. Such causes have no discoverable association with pulmonary disease and the effusion is the result of a primary infection of the pleura.

When the interlobar effusion increases to a measurable extent it will probably burst its adhesions and

infect the general pleural cavity. The physical signs of interlobar effusions are indefinite.

In a large percentage of cases of acute inflammatory pleural effusion the ribs are drawn together because of the reflex contraction of the intercostal muscles in inflammatory conditions of the underlying viscera.

A marked separation of the ribs is usually found only in large non-inflammatory effusions and occasionally in cases of empyema in children when the effusion has been a very rapid process.

Twenty-four case reports are given with 31 X-ray pictures illustrating the various types of effusions.

CARL R. STEINHAUF

Ashhurst, A. P. G.: Observations on Empyema. *Ann Surg*, 1920, LXXII, 12

At the meeting of the American Surgical Association twenty-six years ago the author's father, in opening the discussion on empyema, laid down the following six propositions:

1. "No operation is justifiable: (1) unless the presence of pus is certain; (2) unless thorough treatment by medicinal agents, blisters, etc., has failed, or (3) unless the symptoms, dyspnoea, etc., are so

and drainage should be practised.

4 "Drainage is best effected by making two openings, one at the lowest available point, and carrying a large drainage tube through the cavity

ceased the tube should be shortened, the upper opening being allowed to heal and the tube being then gradually withdrawn through the lower opening.

6 "When the lung is so bound down by adhesions that it cannot expand, resection of one or more ribs should be practised (Estlander's operation, so-called), in order to allow collapse of the chest wall."

The author maintains, however, that though numerous punctures are negative, it is not only justifiable but imperative at the present day to resort to exploratory thoracotomy when the symptoms are

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The treatment of lung abscess, simple or bronchiectatic, when complicating empyema, is merely suggested.

Chronic empyema with sinus demands non-collapsing thoracoplasty

A sinus with bronchial fistula in the depths will often close when the cavity is sterilized as well as possible and filled with Beck's paste or iodoformized vaseline.

Attention is called to the importance of the X ray and fluoroscope

In the author's opinion empyema is a disease which demands treatment in a hospital

Moszkowicz, L. Physical Factors in the Treatment of Empyema (Physikalische Erwägungen zur Empyembehandlung) *Med Klin*, 1920, xvi, 291.

The Buehler "lift" drainage method is easy to use, decreases the danger of pneumothorax and shock, and causes excellent expansion of the lung. The evacuation of the lung, however, is incomplete and drainage disturbances are difficult to avoid. Rib resection guarantees complete evacuation of pus, but is associated with severe shock, pneumothorax, and collapse of the lung.

Under local anesthesia the author resects 2 cm of the sixth rib in the posterior axillary line and through a very small pleural opening introduces two drains which he packs off well. The ends of the drains are placed in vessels containing sterile saline solution. The shock is minimal with this method and the lift drainage is immediately effective. When one of the glasses containing warm normal salt solution is lifted above the thoracic opening a comfortable irrigation of the pleural cavity takes place.

In the 21 cases treated by the author by this method there were 4 deaths and these were due to other complications. For the after-treatment the breathing exercises of Hofbauer are recommended.

PAUL DEUS (2)

Bunts, F. E.: Operation for Empyema in Young Adults. *Ann Surg.* 1929, lxxii, 66

This paper is based on the author's experience with 175 cases of empyema in a base hospital.

Whenever possible, the X-ray was used to detect the presence and location of the empyema as it was found to be a more accurate diagnostic method than the use of the aspirating needle.

When bacteria were present aspiration was done under primary ether anaesthesia, after which a 2 per cent solution of glycerine and formaline was injected. Seven out of 16 of these cases did not require further operation. When both yellow pus and bacteria were present an operation was performed within twenty-four hours unless there were signs of pneumonia. Ether anaesthesia was used except in a very few of the most serious cases, and without any ill effects. In addition, a local anæsthetic was employed over the area of rib

to be resected. The bone was excised rapidly and a long $\frac{3}{4}$ in. tube was inserted, sutured tightly to the wound, and clamped, the clamp being opened at half-hour intervals until the chest was evacuated. The patient was kept in the Fowler position. After about ten days the cavity was washed out twice

take

Postmortem examinations revealed the fact that all of the deaths were due to pyæmia rather than empyema.

That this method of operating for empyema is worthy of consideration is proven by the excellent permanent results it obtained and its low mortality rate; a secondary but important advantage is the elimination of the usual disagreeable odors which are usually associated with empyema.

[illegible]

Chir 1020, LVII, 470

The following table compiled according to Perthes' classification gives the cases of carcinoma of the breast observed at the surgical clinic of the University of Marburg

	Cases	Recurrences in first year		Metastases without local recurrence	
		No	Percent	No	Percent
Group 1 No X-ray treatment	62	7	11.2	3	3.8
Group 2 Inadequate X-ray treatment	36	13	41.7	6	16.6
Group 3 Repeated X-ray treatment	23	8	32	1	
Group 4 Intensive X-ray treatment	11	5	45.5	2	18

As in Pertbes' report, the highest number of recurrences during the first year occurred among the patients who had received the most intensive treatment. The number of cases is too small to warrant an estimation of the occurrence of metastases outside of the region operated upon, but it seems probable that such metastases were most numerous also in the cases belonging to Group 4. The results therefore agree in the main with those of Pertbes.

Bott (2)

TRACHEA AND LUNGS

Jackson, C., and Spencer, W. H.: The Diagnosis and Localization of Non-Opaque Bodies in the Bronchi. *Am J. Roentgenol*, 1920, n s vii, 277.

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great majority of the postoperative complications are due to operative infection

Foreign bodies should be extirpated during the primary operation if they can be reached easily, or secondarily, or late, according to the complications which arise. There are three routes of approach to the heart:

1. By the formation of a thoracic flap, the convexity of which extends beyond the midline of the sternum. The fourth, fifth, and sixth costal cartilages are turned back temporarily and the pericardium is exposed. If necessary, a small sternal flap is also turned back on the right side. This route has the disadvantage that it opens the pleura.

2. By means of a simple intercostal incision at the level of the fourth space. The thorax and pleura are opened and the approach to the heart obtained by retraction with or without resection.

3. By means of a median vertical incision sectioning the sternum and a transverse incision opening the abdomen. Forced separation then gives a wide approach to the heart without opening the pleura. When the pericardium is incised care must be taken not to injure the phrenic nerves.

A wound of the heart may be sutured with the heart *in situ* or after it is brought to the surface of the thorax. Only moderate traction should be used and this should be released if the heart beat stops.

The incision of the heart for the removal of a foreign body or the treatment of an endocardial lesion must not be made in any of the danger zones. These zones are those near the bundle of His, the interauricular septum, and the large coronary vessels, including the coronary artery from its origin to its bifurcation. Section here is fatal but the branches of the coronary artery may be tied off with impunity. To extract a foreign body the heart should be taken in the palm of the hand and the region to be incised should be limited by two fingers. The possible complications of this procedure are cardiac syncope and hæmorrhage.

Of the three methods of cardiolytic, the cardiocostal is indicated most frequently and gives the best results. This has been used in cases of bilateral pericardial pleural adhesions with concomitant and consecutive asystole.

It has been proved experimentally that absence

successful in 15 cases. These were cases of chloroform poisoning and cardiac syncope due to asphyxia. The pressure should be made upon the ventricles and should be soft, regular, and prolonged. The subdiaphragmatic route of approach has given the best results. Success depends especially on the

PHARYNX AND OESOPHAGUS

Guisez, J.: The Treatment of Severe Cicatricial Strictures of the Oesophagus (*Etat actuel du traitement des sténoses cicatricielles graves de l'œsophage*). *Presse méd.*, Par., 1920, xxviii, 421.

In this article Guisez discusses only those cases of cicatricial stenosis which are due to trauma, disregarding cases of inflammatory stenosis which become cicatricial in the advanced stages. Since 1903 he has treated 135 such cases. Most of them were caused by the swallowing of caustic fluids. Only 6 were due to foreign bodies. More than two-thirds of these traumatic stenoses, although impassable by a soft catheter, were easily overcome by a few endoscopic treatments. Forty-four were particularly severe, the patient being unable to swallow liquids or even saliva. In 36 of these severe cases, however, a single œsophagoscopy treatment was successful. In the others, direct endoscopy or gastrotomy following retrograde catheterization was employed.

possible. When the lumen is found, a filiform

allowed to remain in place for ten or twelve hours. Any attempt to replace it immediately with a larger bougie will usually result in failure. The substitution of a larger bougie should be delayed until the filiform bougie passes freely. Successively larger bougies should then be introduced. In order to prevent a false passage these bougies should be screwed to the end of the exploring filiform bougie.

When there are several stenoses, and especially when they are not concentric, each must be dilated

ward. While this method is efficacious in cases of stenosis in the region of the cardia, it is very painful and its results are less apt to be permanent than those obtained by circular electrolysis.

In the author's opinion the cardia cannot be reached any more successfully by even a very extensive gastrotomy than by retrograde œsophagoscopy. In many cases there is complete closure and adhesion of the walls of the œsophagus at the cardia by an impassable cicatricial block. Catheterization upward under retrograde œsophagoscopy

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In 1 case there were symptoms of ulcer twenty-one months after the operation. During a gastrotomy two years after the first operation 6 in. of thread were found hanging from the inside of the anastomosis. All of the symptoms disappeared when the thread was removed. The Mayos have showed that such non-absorbable sutures are probably the most common cause of gastrojejunal ulcer. For the past four years, therefore, the author has used No. 0 chromic gut.

In 1 case a duodenal ulcer which was not demonstrated in the X-ray plate was shown in the fluoroscope when the stomach was pressed aside.

Eighteen cases of gastric ulcer were treated by gastro-enterostomy alone, and in this group there were no postoperative deaths. The Murphy button was used successfully in 2 cases. Reports received from 14 patients showed that 78.3 per cent of the operations were successful. Gastro-enterostomy alone cured 1 case of hydrochloric acid burn and 3 cases of chronic ulcer. The best results following gastro-enterostomy for gastric ulcer were obtained in cases of chronic pyloric stenosis with dilatation of the stomach.

The author is convinced that excision alone is unsatisfactory. Better results are obtained when excision is combined with gastro-enterostomy or, better, with the Balfour cautery operation. Meso-gastric resection does not give as good final results as excision.

There were 26 cases of gastric ulcer treated by resection of the stomach by the Billroth method. The mortality was 15.3 per cent. In gastric ulcers near or at the pyloric end of the stomach the author does a resection, preferably by the Polya-Reichel technique. If the antrum is normal and the ulcer

converting the longitudinal incision into a transverse incision by suturing. Rammstedt suggested leaving the pyloric wound gaping. The Fredet-Rammstedt operation combines these two techniques.

In 175 cases treated by a Fredet-Rammstedt operation there were 30 deaths (17.1 per cent). In the cases coming to operation four weeks or less from the date of the onset of the symptoms the mortality was 8 per cent. All deaths occurring in the hospital after operation were recorded as operative deaths. Eighteen babies died in collapse in from three to seventy-two hours. None was refused operation. The average age was 9 weeks. The postmortem examination was negative in every instance. Five patients died of general peritonitis, 2 of acute gastro-enteritis, and 3 of hemorrhage.

The diagnosis was based on the history and physical findings. The principal symptoms were

condition, the operative technique, and the complications.

Of the 145 babies discharged as cured, 89 have been seen or traced in the last two months. All are in excellent health. Eleven have died and 45 have been lost sight of.

The author's conclusions are as follows.

1. If the patient is observed from the onset of symptoms, medical treatment may be tried for a period not longer than ten days, provided the weight loss does not exceed 20 per cent during this time. If at the end of this period the child does not show definite improvement, operative interference is indicated. Any patient who suffers a relapse while under medical treatment should be operated on at once.

2. When data as to the previous weight are lacking and the patient's condition is not very good an operation should be performed at once if the condition has persisted for ten days.

3. The mortality among patients coming to operation within four weeks from the onset of symptoms is less than 8 per cent.

4. The results following the Fredet-Rammstedt operation are permanent and the cure complete.

CARL R. STEINKE

the results were satisfactory in only 60 per cent of those treated by resection. In 4 cases in which the Billroth method was used and in 9 treated by the Polya-Reichel method the results were excellent. Carcinoma developed in a case of non-resected ulcer five and one-half years after the operation, during which time there had been entire absence of symptoms.

Dietetic treatment should be given following operation. The care of the teeth and gums is also important. Operation does not cure the ulcer but merely puts the stomach in such a condition mechanically and chemically that healing of the ulcer is favored.

MARCUS H. HOBART

Downes, W. A. *Gastrointestinal Surgery*. Sten the form

Fredet suggested making a longitudinal incision in the serous and muscular coats of the pylorus and

Gillon, G. G. A New Pylorus. *Practitioner*, 1920, CIV, 473.

This article presents a new and simple method of dealing with pyloric obstruction, a modification of the routine method of no-loop posterior gastro-enterostomy which has been done for years. There

INTERNATIONAL ABSTRACT OF SURGERY

NOVEMBER, 1920

ABSTRACTS OF CURRENT LITERATURE GENERAL SURGERY—SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Bailey, C. F.: The Removal of Metallic Foreign Bodies by Surgical Operations under Direct X-Ray Control. *Lancet*, 1920, cxcix, 125

The author highly recommends the removal of foreign bodies under direct X-ray control and states that this method is easy and sure, that the average time of operation is appreciably reduced, and that the after-results are excellent. X-ray plates and surface markings do not always give satisfactory information with regard to the location of foreign bodies, as evidenced occasionally by severe damage in the form of excessive scar tissue and disability resulting from unsuccessful search. Consultation of the surgeon with the radiologist prior to operation may overcome some of the difficulties.

The essentials of a suitable equipment for direct-control operations are: (1) freedom from the possi-

(2) X-ray
se in the
points of
iple five-
whatever
opposite
gist who
isfactory

X-ray protection.

A large, well-lighted, well-ventilated room with dark-red walls is desirable, ventilation may be obtained after operations. Artificial light and light-proof blinds are necessary. One powerful, shaded, movable electric light should hang over the table for the surgeon, a weaker, shaded light should hang beside it as a substitute, and another weak light should be provided for the anesthetist. The use of red-glass goggles has been advised, but is not practical.

The objections raised to the procedure are based on: (1) inability to see anything on the screen, (2) the danger of operations with the screen, and (3) inability to maintain asepsis. H. W. HUNDLING.

Williamson, H.: A Note on the Value of Blood Transfusion before Operation in Severe Secondary Anæmias. *Proc. Roy Soc Med*, Lond., 1920, xiii, Sect. Obst. and Gynec., 149

The author reports a case of uterine fibromyomata complicated by severe uterine hæmorrhage of six weeks' duration. At the time the case was received at the hospital for operation the red blood cells numbered 1,670,000 per cubic millimeter and the white cells, 52,000 per cubic millimeter, while the hæmoglobin amounted to only 22.5 per cent. The patient was very restless and breathless; the pulse was 130 and of poor volume; the temperature, 101° F.; the tongue, dry and furred. Incontinence of both urine and feces was associated with frequent vomiting.

For six days following the patient's admission to the hospital her general condition continued to become much worse, the red blood count falling to 845,000 per cubic millimeter. On the sixth day 600 ccm. of citrated blood were transfused into the median basilic vein. The effect was most decided. Three days later the temperature was normal, the vomiting had ceased, and control over the bladder and rectum had returned. The red cells had risen to 3,485,000, and the white cells had fallen to 29,000 per cubic millimeter.

Fifteen days later, the patient's general condition being greatly improved, a subtotal hysterectomy was performed with the removal of the tubes and ovaries. This was followed by an uninterrupted recovery and the patient left the hospital quite well at the end of three weeks. On the day of her discharge the red cells numbered 4,250,000 and the white cells, 10,400.

The author suggests that blood transfusion should be performed before delivery in cases of severe antepartum hæmorrhage and before operation in all cases in which there is a very severe anæmia as it diminishes the risk of the operation, lessens the liability to thrombosis, and shortens the period of convalescence. CARL H. DAVIS

the pancreas, should be protected with a portion of the omentum.

The operation is completed by an anterior gastro-enterostomy parallel to the resected border of the stomach

A J SCROLL, JR

Bland-Sutton, J. Clinical Lecture on Fibroids, Lipomata, Dermoids, and Polypi of the Stomach and Intestine *Lancet*, 1920, cxix, 5

Fibromyomata may develop in any portion of the gastro-intestinal tract and may occur as subserous or submucous growths. They are comparatively rare and may lead to intussusception or volvulus. Histologically they may closely resemble sarcoma.

Lipomata occur either in the subserous or submucous portion of the stomach and intestine. When formed in the subserous portion they cause a dimpling of the serosa.

Dermoids are the most rare of all tumors occurring in the intestinal tract and are found in the terminal segment of the large bowel.

Polypi (adenomata and papillomata) single or multiple may develop from the mucous membrane of any portion of the gastro-intestinal tract. They may be flattened or wart like and simulate colic cancer. The symptoms are recurrent attacks of pain, diarrhea, and melena. Anemia and loss of weight result. The diagnosis is established by the sigmoidoscope. Polypi are uncommon in the stomach.

J A H MAGOUN

Terry, W. L.: Ulcer of the Jejunum following Gastrojejunostomy *J Am Med Ass*, 1920, lxxv, 219

The principal factors in the production of jejunal

4 Patients subjected to gastro-enterostomy should be instructed as to a suitable diet and this diet should be continued for at least a year. In addition, antacids should be given if the gastric analyses seem to warrant their employment.

5 Patients should be urged to seek advice again if pain returns.

CARL R STEINKE

Josselin de Jong: Subserous Adenomyomatosis of the Small Bowel (Zur Frage der subserösen Adenomyomatosis des Dünndarms). *Frankfurt Ztschr f Path*, 1920, iii, 400

The author, who was the first to describe subserous adenomyomatosis in the literature, discusses the criticisms of his report made by Hueter and Busse. He again describes his pathologico-anatomic findings and states that the chronic hyperplastic inflammation resulting in thickening of the serosa and contraction of the lumen is due to stimulation

surrounded by a layer of muscle cells. The gland formations are not contiguous with the mucosa of the bowel and differ from the normal glands of the mucosa.

Hueter does not believe in the theory of new formation. He considers the glands of inflammatory origin and suggests that the condition should be called "peritonitis adenoides." The author endeavors to refute this theory on the basis of his experimental findings. The theory of Busse that the condition is due to metastatic tumor formations he declares is contrary to the microscopic findings.

JANSEN (Z)

Bevan, A. D.: Surgery of Cancer of the Large Intestine. *J Am Med Ass*, 1920, lxxv, 283

In cases of cancer of the large intestine in which

the tumor the anastomosis with the stomach

less neutralizing power than the duodenum. Other factors of prime importance are trauma, especially from retained sutures or anastomosis buttons, and infection.

2 As the number of cases of ulcer of the duodenum following pyloroplasty or gastroduodenostomy is very small, it would seem wise to employ those operations in suitable cases.

3 Gastro-enterostomy should be performed with much care, clamps, if used, should be adjusted without causing trauma of the viscera, and only absorbable sutures should be employed.

opposite side of the incision, the two ends being fastened to a bone or porcelain button about 1 in in diameter. The skin incision is then closed with a black silk suture without suturing the peritoneum or muscle, and the entire field is covered with thick, sterile zinc oxide paste. A No. 12 or 14 American catheter is introduced into the proximal loop and held by two purse-string sutures of Pagenstecher linen. The colostomy opening is completed after three days by electrical cauterization.

The surgery of cancer of the large intestine is based on three basic principles:

1. Different incisions must be made for carcinoma in different locations: a right split-muscle incision for cancer of the cecum and ascending colon; a large S-shaped incision on the right side when the growth

the contents of the upper intestine are forced into the stomach to be finally disposed of by vomiting.

The importance of vomiting as a cardinal symptom is well illustrated in certain cases of hernia in which abdominal pain and vomiting are the only two symptoms which attract attention. In every case of vomiting associated with abdominal pain, therefore, a careful examination should be made for hernia as the symptom may be due to the incarceration of a small knuckle of the intestines in a hernial sac. In strangulated hernia vomiting is an early and serious symptom. At first it is reflex in character, but later becomes regurgitant.

In intestinal obstruction first the stomach contents are vomited, then the bile, and finally the duodenal contents. In the beginning the vomitus is odorless but a few days later it becomes fecal in nature. A lesion in the upper part of the small intestine is characterized by the rapid oncoming of vomiting of a violent and expulsive nature, while in obstruction of the large intestine there may be eructations of gas without vomiting or vomiting is a later symptom which generally follows tympanites. The fecal nature of the vomitus in obstruction of the large intestine may be ascribed to the regurgitated matter from the upper bowel as there is no evidence that the contents of the large intestine are ever vomited. In intussusception, fecaloid vomiting is exceptional.

Regurgitant vomiting following the operation of gastro-enterostomy is due to several causes, prominent among which are too free and careless handling of the intestine, a kinking of the bowel at the point of anastomosis, and too firm pressure due to faulty clamping. Because of improvements in surgical technique and the better understanding of abdominal surgery, this deplorable sequela is much more rare today than formerly.

Diseases, deformities, and malpositions of the female generative organs may give rise to a series of symptoms, not the least conspicuous of which, in many instances, are nausea and vomiting.

The author suggests that when the causes of vomiting are not plainly indicated, an investigation should be made of every organ and bodily function.

GEORGE W. HOCHREIN.

Gabriel, W. B.: *Hæmorrhage following the Operative Treatment of Internal Hæmorrhoids, with Particular Reference to Severe Secondary Hæmorrhage*. *Lancet*, 1920, cxcix, 121.

The author bases his paper on an analysis of 500 cases of internal hæmorrhoids in which operation was performed at St. Mark's Hospital. Ligation operations were done in 470 instances, 18 patients were treated with the clamp and cautery, and the Whitehead operation was done in 12 cases.

The three patients with intermediate hæmorrhage were treated by plugging the rectum and were given morphine to keep them quiet.

Severe secondary hæmorrhage, which is an uncommon complication, occurred in 5 cases, in all of

which a ligation operation had been done. Slight secondary hæmorrhage occurred in 8 cases, in 7 of which a ligation operation had been done. The average date of hæmorrhage was the seventh day after operation. The usual causes were infection, trauma, anaemia, and general debility, and, to a less extent, blood diseases such as hæmophilia.

The symptoms produced may be very slight. The most common sign is a trickling of blood from the anus. The patient should be confined to bed and carefully watched for any general signs of hæmorrhage as the quantity of blood escaping is not an index of the real amount of bleeding. If signs of severe hæmorrhage are present a tubular speculum should be passed and the exact amount of hæmorrhage determined.

The most satisfactory treatment consists in washing out the rectum with warm saline or lysol solution and then plugging it by passing a rubber tube with a "surround," as described by Lockhart-Mumery. The tube is removed on the following day and 5 oz. of sterile oil are injected into the rectum, the bowels are kept open by suitable aperients.

The author believes that by the treatment out-
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ASEPTIC AND ANTISEPTIC SURGERY

Norton, J. F.: *Soaps in Relation to Their Use for Hand Washing*. *J. Am. M. Ass.*, 1920, lxxv, 302.

The Food and Drugs Act of 1906 does not prohibit advertising or the issuing of circulars which contain fraudulent claims as to the desirable qualities of foods or drugs. It is applicable merely to the package or container. The same ruling applies to soaps. Soaps are now advertised as being "antiseptic for wounds, etc., including cancerous infections and for bathing in contagion."

Chemical tests have shown that certain soaps are free from bacteria and that when they are rubbed over the body the skin is rendered sterile.

The "phenol coefficient" is supposed to be the gauge of the antiseptic power of soap. While admitting that soap solutions in sufficient concentration are antiseptic, though not germicidal, the author questions the value of the phenol coefficient as there is a great difference between the laboratory tests and the actual use of the soaps.

According to certain army statistics influenza was more prevalent among groups of persons who washed their dishes in a common receptacle, and it may be concluded therefore that the bacteria were transmitted from the hands of one person to those of another through the medium of the dish water.

Different observers have found most of the common pathogenic organisms on the hands of patients, carriers, and hospital attendants.

To date, the only experiments on the actual antiseptic properties of soap in hand washing were those made by Symes in 1899. Symes found that solu-

If there is danger of peritonitis, or if peritonitis is present already, the opium-water-posture-heat method should be inaugurated at once. This method is all but specific.

If secondary anaemia is present or healing is retarded, blood transfusion is indicated and the patient should be given the benefit of a dietetic and hygienic regimen identical with that prescribed in cases of tuberculosis.

The colostomy should be closed only after the intestine has completely healed.

In 72 cases the mortality was 9.7 per cent. Crile's own series of 38 operations included 20 radical operations with no mortality. The end results will be reported later. This article contains one table and seven illustrations. CARL R. STEINKE

LIVER, GALL-BLADDER, PANCREAS, AND SPLEEN

Einhorn, M.: The Diagnosis and Treatment of Gall-Bladder Affections. *N. York M. J.*, 1920, cvii.

The diagnostic methods used by the author in cases of obscure gall bladder affections are as follows:

1. X-ray examination. By this means conditions casting shadows in the region of the gall bladder can be detected. It can be determined also whether the duodenum has been distorted by the gall bladder lesion and whether the gall-bladder, pylorus, and duodenum have been pulled to the right by adhesions.

2. Direct examination of the bile obtained from the duodenum when the patient is fasting. In pathologic conditions the bile is turbid and dark and contains mucus and pus. Frequently also bacteria, cocci, and accumulations of cholesterol and calcium crystals are found in it. Pus and mucus indicate the presence of cholecystitis. Pus and mucus plus cholesterol and calcium crystals indicate cholecystitis and stone. In complete obstruction of the common duct no bile will be found.

3. Duodenal bucket and string test. This test is more conclusive.

The treatment of all gall bladder affections may be divided into that of acute and chronic conditions.

Acute cholecystitis with or without stones should be treated by absolute rest, hot applications, opiates, colonic flushings with warm saline, and drinks of warm water or tea. Recurrent attacks should be warded off by reducing stagnation of the bile and combating the infection.

Chronic cholecystitis is treated in the same manner except when there are several severe recurrent at-

tacks and when mild attacks are accompanied by a leucocytosis, the condition is due to obstruction, and malignancy is suspected. In such cases operation is necessary. HAROLD K. BIGG.

Hall, M. W.: A Study of the Blood after Splenectomy: with Special Reference to the Leucocytes. *Am. J. M. Sc.*, 1920, cix, 72.

Hall reports the case of a cavalryman at Fort Houston, Texas, who, while caring for his horse after the usual drill, was seized with faintness, nausea, and sudden sharp pains in the left upper quadrant of the abdomen. A laparotomy was performed six hours later. Hemorrhage in the peritoneum was traced to a small tear in the spleen.

In most previous reports on the blood picture after splenectomy emphasis has been laid on the

the time from the seventh to the sixteenth day after operation, the second, an intermediate period; and the third, a period extending from October 15 to November 5, when the study ended. Uniform results are recorded for the first and last periods. The averages for the intermediate period were valueless because of marked variations.

In the final period comparative equilibrium with a moderate increase in the total count due entirely to lymphocytes and endothelial cells was reached and the granular leucocytes showed strictly normal figures. The endothelial cells were constantly increased both relatively and absolutely. A striking feature in the study was the fact that at no time was an eosinophilia present. A. R. HOLLFENDER.

MISCELLANEOUS

Decker, R., Jr.: Technical Progress in the X-Ray Examination of the Abdominal Organs by Means of Pneumoperitoneum. (Technische Fortschritte der Röntgenuntersuchung der Bauchorgane mittels Pneumoperitoneum). *München med. Wochenschr.*, 1920, lxxvii, 664.

The author usually inserts the Denek needle in the midline between the umbilicus and the symphysis pubis. The needle, which is dull and closed in

with the patient in various positions, the air is allowed to come out through the needle. Deep inspiratory movements and external pressure aid in the deflation. The examination may be made also while the patient walks about.

rest in bed, or waiting for the manufacture of a brace.

The author has some fifteen spinal supports differing in weight, strength, and size which can be used with a brace with a wrench and may be used on different persons.

Similar principles may be employed in the manufacture of ready-to-wear braces for injuries to the neck, hips, elbows, wrists, ankles, and feet.

supports.

CARL C. CHATTERTON.

SURGERY OF THE HEAD AND NECK

HEAD

Lenormant, C., and Soupault, R.: Tuberculosis of the Cranial Vault (*La tuberculose de la voûte crânienne*). *Presse méd.*, Par., 1920, xxvii, 494.

The authors have observed 2 cases of tuberculosis of the cranial vault within one year. They believe that the affection occurs more frequently than is commonly believed. In 1910 Pelletier collected and tabulated 206 cases from the literature.

Cranial tuberculosis is seldom primary; it is almost always associated with lesions of other bones or lesions of the lungs, and in very rare instances with a meningeal or cerebral tuberculosis. The patients are usually young. While any of the bones of the head may be affected, the disease is found usually in the frontal or parietal regions. Pelletier's collected cases included 78 frontal and 76 parietal lesions but only 15 temporal and 18 occipital lesions. The lesion generally originates in the abundantly vascularized spongy portion of the bone and spreads to the internal and external surfaces. The two tables are invaded simultaneously but not usually to the same extent, the deeper surface being more deeply invaded.

Cranial tuberculosis may evolve in either of two forms: as a perforating tuberculosis or as a progressive infiltrating tuberculosis. The authors consider the term "perforating tuberculosis" incorrect, believing that the condition to which it is applied should be designated as "circumscribed tuberculosis."

In the circumscribed form the lesion may involve the external table only or may spread extracranially or intracranially. As a rule the infiltration forms fungosities between the inner table and the dura mater, and at times an extradural tumor is formed.

Progressive infiltrating cranial tuberculosis is characterized by the extensive progress of the dis-

external abscess. First there is localized pain which is elicited especially on pressure, then a hard tumor, and finally, after the periosteum has been perforated, a fluctuant tumor. The presence of such a fluctuating abscess is an infallible diagnostic sign as in no other affection is an extracranial collection of fluid formed without acute reactional phenomena. After opening of the abscess fistulization occurs.

Cranial tuberculosis is rarely associated with cerebral symptoms due to compression or irritation of the meninges. In the 206 cases collected by Pelletier such symptoms were observed in only 4 instances and there were only 9 cases of meningeal, and 4 cases of cerebral tuberculosis.

The prognosis depends both on the presence of complicating bacterial lesions and the anatomical form of the tuberculosis. If the tuberculosis is primary and circumscribed and if proper treatment is given the prognosis is always favorable.

The only efficacious treatment of tuberculosis of the cranial vault is complete excision of the affected tissues. The osseous resection should surpass the limits of the infiltration and all extradural fungosities should be carefully curetted. When the area is circumscribed the operation is simple and only slightly mutilating. In the infiltrating form an extensive craniectomy and resection are indicated. Repeated operations are often necessary to prevent recurrences and obviate the formation of fistulae. In 1 case reported by Israel the patient was subjected to 35 operations in seven years.

Pelletier's statistics included 76 cases of cranial tuberculosis treated surgically. In these there were 52 complete recoveries, 8 recoveries with fistula, and 16 deaths.

The two cases reported by the authors were: (1) a case of circumscribed parietal tuberculosis on the right side in a woman 35 years of age; and (2) a case of infiltrating tuberculosis of the right parietal region in a man 28 years of age. Both patients recovered after operation, but in the second case a recurrence has developed and the prognosis is very unfavorable.

WILLIAM A. BRENNAN.

Coleman, C. C.: The Repair of Cranial Defects by Autogenous Transplants. *Surg., Gynec. & Obst.* 1920, xxxi, 40.

This paper is based on a series of 208 cases of head injuries treated in the U. S. General Hospital No. 11. Of these cases 5 were operated on for cranial defects.

results from a progressive infiltration of the bony tissue by the infection, the authors are inclined to the opinion that the propagation occurs through the fungosities between the bone and the dura rather than through the bone.

There are three phases in the clinical evolution of cranial tuberculosis before the appearance of the

between the convulsive phenomena and faecal retardation, (2) the faecal retardation depends upon anatomical disturbances, generally ptosis of some part of the gastro-intestinal tract, and (3) it is frequently possible to cure both the constipation and the convulsions by the surgical correction of the anatomical conditions underlying and causing the constipation.

In the series of cases reviewed either grand mal, petit mal, or both were present and associated with constipation. The diagnosis was greatly aided by the use of the barium meal and the X-ray which confirmed the location of the anatomical disturbance. The anatomical disturbances found were: caloptosis, redundant sigmoid, descensus of the liver, gastro-caloptosis, Lane's kink, cecal dislocation, and adhesions at various locations.

The operative treatment consisted of the breaking up of various adhesive bands, hepatoxy when the liver was involved, and straightening of the caecum.

pneumostomy may be performed, more radical intervention being delayed.

Of 26 surgical recoveries, 8 have been actual cures and 11 probable cures. Many of the patients have not been heard from since the primary operation.

ROBERT R. MUELLER

Hohlbaum, J. Congenital Defects in the Mesentery Causing Intestinal Obstruction (Ueber die angeborenen Mesenterialnucken als Ursache von Darmenklemmung) *Beitr z klin Chir*, 1920, *vol* 468.

The author reports three cases of ileus caused by a defect in the mesentery. In these cases the defects were found in the mesentery of the lowest portion of the ileum near the ileocaecal juncture. This is the most typical location. A satisfactory explanation for the formation of such defects has not yet been discovered. Trauma, which is placed foremost among the possible causes in the older literature, is rare and therefore cannot be a very important factor. On the other hand, the fact that

anomalies in formation are found indicates that the condition may be congenital. Prutz believes that the cause is inflammation but as a rule no inflammatory changes about the edges of the defective mesentery and in the surrounding tissues can be discovered.

In the first case reported by the author adhesions had been formed in the vicinity of the defect and a calcified mesenteric lymph gland was found lodged within the opening underneath. While in this instance it could be readily assumed that the defect in the mesentery was of inflammatory origin, especially as the patient gave a history of mesenteric lymph-gland tuberculosis, the fact that such defects

do not occur after peritonitis renders it improbable that inflammation is an important factor in most cases. If it were, defective mesenteries would be more frequent also after appendicitis. On the other hand such inflammatory changes may result secondarily because of the defect.

In one case described by the author another anomaly was found in the sigmoid flexure which was adherent, displaced to the right, and suspended from a short mesosigmoid. This condition could not have been caused by inflammation, but must have been of congenital origin, a view supported by the studies of Toldt and Konjetzny. The adhesion of the mesosigmoid to the duodenojejunal flexure and the mesentery of the small intestine has been described by them as a developmental anomaly in the foetus.

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obstruction resulted from volvulus of the loop of bowel within the opening in the mesentery. To explain the volvulus Hohlbaum refers to the experiments of Payr on the causes of rotation of the intraperitoneal organs. The diagnosis is difficult. In one instance the condition was diagnosed as appendicitis because of the location of the obstruction. At operation the character of the obstruction is very difficult to determine, and the openings in the mesentery are not easily sutured. To close the hole in the mesosigmoid the author uses the omentum.

HIFLER (Z).

Ross, G. G.: Mesenteric Thrombosis. *Ann Surg*, 1920, *vol*, 121.

Thrombosis of the mesenteric vessels is a condition of interest to the surgeon not only because of its comparative rarity, but also because of its gravity, the difficulty of diagnosis, and the corresponding lack of success in its treatment.

The superior mesenteric artery alone supplies the small intestine and practically all of the large bowel with the exception of the descending colon, the sigmoid, and the rectum. The duodenum has a double blood supply. The superior mesenteric artery is an end artery while the inferior mesenteric is not.

There seems to be no doubt that arterial blocking in the mesentery is far more common than obstruction of the venous circulation.

Arterial obstruction results from embolic plugging of the vessel, thrombotic obliteration, or thrombosis developing at the site of lodgment of an embolus.

Venous obstruction is of an ascending or a descending variety. Whatever the nature of the beginning of the process, its course, prognosis, and treatment are the same.

Cassamajor, L.: *The Diagnosis of Brain Abscess. Laryngoscope*, 1920, xxx, 436.

The localization of brain lesions requires a co-operation on the part of the patient which usually is impossible to obtain when the lesion is an abscess. Other factors which render this neurological problem unique are the severity and usually short course of the condition.

Brain abscess resulting from purulent ear disease may develop in one of three ways: (1) by direct extension which often is of the nature of a localized meningitis, (2) by indirect extension, the abscesses frequently lying very deep and the route of infection being probably the Virchow-Robin lymph spaces in the vessel walls, the only lymph spaces in the central nervous system; and (3) by metastasis.

Ninety-three and nine-tenths of the abscesses of otitic origin are formed in the temporosphenoidal lobes and cerebellum.

The symptoms may be divided into three fairly definite stages:

1. The initial stage in which there is headache (which may be limited to the side of the lesion), vomiting, and clouding of consciousness.

2. The latent stage which persists from a few days to over a year.

3. The stage of general and local symptoms. Of the general symptoms fever may be subnormal or absent but if the abscess breaks through into the meninges or ventricles it is high. Headache may be more severe in a part remote from the lesion and cannot be relied on as a localizing symptom. Vomiting of the projectile type occurs in 75 per cent of the cerebellar cases and is ascribed by Okada to pressure on the medulla. Slowing of the pulse rate even in the presence of moderate fever is a frequent and important sign. Choked disc is found in only 53 per cent of all abscesses, optic neuritis without papilledema being much more common because of the fact that the general symptoms of brain abscess are due much more to intoxication than to pressure.

most common form, causes the least definite localizing signs. Left homonymous hemianopsia occurs when the optic radiation fibers are impaired, but the patient's mental condition usually prevents its discovery. In cases of left temporosphenoidal lesions a disturbance in the speech mechanism is the rule. Complete sensory aphasia or hearing disturbances are rare. Paraphasia is usual.

In cerebellar lesions the localizing symptoms are definite. The head is turned back or toward the side of the abscess and there is rigidity of the neck with increased pain in the head and dizziness when the patient sits up. As the muscular control of the cerebellum is homolateral, cerebellar signs are seen on the same side as the lesion. All movements of the limbs when the patient is reclining are asynergic, and adiakocinesis is usually present.

SPENCER S. HOWE.

Fischel, E.: *The Use of Radium in Carcinoma of the Face, Jaws, and Oral Cavity. J. Missouri State M. Ass.*, 1920, xvii, 267.

Following a discussion of the advantages of, and indications for, operation and the use of the high frequency current, Fischel states that nearly all basal-cell epitheliomata of the face may be cured by means of the roentgen ray. This treatment is of much less value, however, for other more malignant types of epitheliomata of the face, and is of practically no value when the lesion is located within the oral cavity. In discussing combined roentgen-ray and radium therapy, the author states that the alpha, beta, and gamma rays from each are quite similar, and rays of any desired strength and penetration may be obtained from either. Hence, theoretically, the similar results obtained by these therapeutic agents should be similar. While this is true as regards skin growths, it is not true as regards tumors in the deeper tissues and growths so large that they act as factors in both distance and screening. In such cases radium is more desirable as a definite amount may be buried in the tumor mass itself.

The character of the malignant growth is also an important factor. Most basal-cell epitheliomata may be cured by any method of treatment. This is true also as regards some squamous-cell carcinomata of low malignancy. The prickle-cell carcinomata are very resistant, however, and are prone to diffuse beyond the visible or palpable limits of the disease. This is the type most commonly encountered about the face, jaws, and oral cavity. As they are rapidly growing tumors and very highly malignant, they should be treated very radically from the beginning. If improper dosage is used stimulation rather than retardation may result.

The author outlines the method of treating cases of carcinomata at the Barnard Free Skin and Cancer Hospital. All cancer patients, other than gynecological patients, are presented at a conference of the entire staff, and if this staff decides that radium is to be used, a recommendation is made to that effect. The amount, screening, time, etc. are determined by the men who make the application. Most of the radium treatments are given with tubes. At first, small doses and heavy screening were employed, but better results were obtained when the use of large doses and less screening was instituted. With the latter method, fewer recurrences and less extension of the lesions have been noted.

Radium therapy is the treatment of choice for carcinomata of the face for several reasons. It least upsets the patient's routine life, the maximum dose may be applied over a definite area, and it is followed by a minimum of scar formation.

At present, cancer of the lower lip is treated with a heavy initial dose and very little screening. If no submaxillary glands are involved, the author waits three months and then removes the submental and submaxillary lymphatic systems, but if these glands are involved at the time the treatment is given they are removed within six weeks. If the submaxillary

understanding due to the war. Many of the patients were referred for chronic rheumatism and arthritic conditions. On the basis of his experience the author draws the following conclusions:

1 Osteomalacia is not an uncommon disease, but as a rule is not recognized until spontaneous fractures call attention to it.

2 Osteomalacia simulates rheumatic and arthritic conditions.

3 In addition to the roentgen picture, which is typical and easily disclosed, there are a sufficient number of clinical manifestations to indicate the presence of the lesion in its early stages.

4 The clinical manifestations include a characteristic short, unsteady gait, the back being bent and the head lowered, indefinite or vague rheumatic pains referred to different articulations, an excess of earthy phosphates in the urine, frequency of the white line of Sargent, and, as the disease continues, diminution in height due to atrophy of the bone or bending of the femur and other long bones.

5 Judging from the endemics in Central Europe the condition seems to be due to undernutrition or improper nutrition with deficiency of lime, phosphorus, and vitamins.

6 Suprarenal, parathyroid, and gonad deficiencies are also noted in cases of this lesion. Whether these are reflexly due to the nutritional defects mentioned or are primary remains to be determined.

7 Treatment by rest, actinotherapy, diet, and endocrine products, especially when the condition is not too far advanced, will be effective.

ANDRÉ HIRTUNG

Law, A. A. War Wounds of the Major Joints.

Annals of Surg. 1920, 33, 37

The treatment of joint wounds was entirely changed during the world war. Instead of the old accepted theory that the synovia has little resistance to infection it is now believed that it is very resistant.

The principles of treatment of joint wounds instituted by Willems of Belgium and Delore of Lyons are as follows: (1) Early débridement and closure, (2) recognition of the exceptional resistance of the synovia to infection, and (3) immediate and sustained free mobilization of the joint.

This treatment has lowered the mortality from 27.6 to 0.9 per cent, has decreased the mortality of thigh amputation from 30 to 2.8 per cent, and has resulted in a more or less movable joint in about 85 per cent of the cases.

Contamination followed all battle wounds in from eight to ten hours, but infection did not supervene until later.

The purpose of early débridement, the ideal treatment, is to remove all foreign bodies, infected material, and devitalized tissue, leaving the wound sterile. If done sufficiently early, primary closure is indicated, but if the wound is contaminated, chemical disinfection and secondary closure are necessary.

A drain may be left down to the synovia, but should never enter the joint. The synovial fluid

remains sterile for sixty hours after the rest of the wound is contaminated.

Active movements should be begun early and continued. If begun early they are not painful. In knee and ankle injuries, if there has not been too much destruction of the joint, walking should be begun on the second day and continued.

When a joint is distended with fluid frequent aspiration is indicated.

If half of a condyle or the articular plateau of the tibia is left a useful joint may be expected. In aseptic joints a large, loose, sterile fragment of bone may be nailed or screwed in place.

In the elbow joint useful function may be expected following a greater loss of structure.

If much bone is lost in the knee or ankle, early use of a hinged splint for mobilization is necessary, but when the popliteal vessels are injured early amputation is imperative.

Willems' open mobile treatment of a septic joint gives the best assurance of a mobile joint.

Joint injuries complicated by comminuted fracture of the long bones were the most serious type during the war. When, in such cases, the fracture itself was

combined with a resection of the joint, the results were usually good. (See also *Annals of Surg.* 1920, 33, 37.)

Ely, L. W. The Second Great Type of Chronic Arthritis: A Laboratory and Clinical Study. *Arch. Surg.* 1920, 1, 158.

The type of arthritis with which this paper deals is characterized macroscopically by cartilaginous

degeneration of the articular surfaces, and by the presence of a large number of cysts in the bone near the joint.

The essential feature of this type of arthritis is an aseptic necrosis with cavity formation in the bone at a short distance from the joint.

Pain, stiffness, deformity, disability, and muscular atrophy of a low-grade form of arthritis are usually

present. The bone is fatty and fibrous, contains minute spicules of bone and cartilage, and frequently shows areas of cellular infiltration. Rarefaction of the bone near the joint is a prominent feature.

Distinct irregular cavities, sometimes resembling cystic formation, are present in a large number of cases. The essential feature of this type of arthritis is an aseptic necrosis with cavity formation in the bone at a short distance from the joint.

Pain, stiffness, deformity, disability, and muscular atrophy of a low-grade form of arthritis are usually

The grafts were taken from the crest of the ilium in all but 2 of the cases. Such grafts have a natural curve quite like that of the mandible, great vascularity which hastens early vascularization and bony union, and softness.

The edges of the bone of the fractured mandible and those of the graft were trimmed so as to fit end-to-end with accurate apposition to the largest possible area of vital bone. In this position they were wired together. If there was close apposition of the ends at the time of operation, a certain amount of muscular stress, which hastened bony union rather than retarded it, could be allowed early without danger of disturbing the close bony contact. In 60 per cent of the cases so treated there was fairly firm union in from six to eight weeks, and very firm bony union in from three to four months.

The chief rôle of the dental splint was found to be the maintenance of correct occlusion during the operation. If the apposition of the ends of the bone and graft was exact and they were firmly wired at the time of the operation, it was found that the dental splint was unnecessary after two or three weeks. In 1 case the splint was removed in three days, with firm bony union later. If close apposition of the bone and graft ends was not possible at the time of operation delayed union occurred in some cases without the aid of the splint.

The pre-operative treatment consisted of the radical elimination of oral sepsis and the correction of deformity due to lingual pull, scar contraction, or faulty occlusion of the teeth. Early splinting prevented deformity. When scar tissue with contraction was present, it was divided and subsequently a dental splint was applied which reduced the deformity. If dental occlusion was faulty, extraction was done.

Some of the cases in the series have been under observation for more than a year. Successive roentgenograms have shown a progressive consolidation of the grafts which, under the influence of early muscular stress, become modified, conform to Wolff's law, and are encircled by a compact layer of bone.

The article contains a tabular analysis of the series of cases reviewed and numerous illustrations of various types of fracture of the mandible.

B R PARKER

NECK

Marine, D., and Kimball, O. P.: The Prevention of Simple Goiter in Man. IV. *Arch Int Med.*, 1920, xv, 661

The authors' observations, covering a period of thirty months, show that simple goiter is easily preventable.

The treatment consists the administration of 2 gm. of sodium iodide given in 0.2 gm. doses daily for ten consecutive days and repeated each spring and autumn.

Of 2,190 students who took sodium iodide twice yearly, 5 had enlargement of the thyroid, while of

2,305 students who did not take the prophylactic, 495 showed enlargement of the gland. Of 1,182 students who had enlarged thyroids at the first examination, 773 showed a decrease in the size of the thyroid after treatment, while of 1,048 students who did not take the treatment only 145 showed a decrease in the size of the gland. These figures present in a striking manner both the preventive and the therapeutic effects of iodine medication.

The prevention of goiter in mother and foetus is as simple as the prevention of goiter during adolescence and is a responsibility of individual members of the medical profession. The prevention of the goiter of adolescence, on the other hand, should be a public health measure under government control. The most feasible method seems to be the administration of small amounts of iodine. Sodium iodide can be given in either solution or tablet form. For use in private practice the syrup of ferrous iodide and syrup of hydriodic acid are excellent. An ounce of these preparations given over a period of two weeks and repeated twice yearly seems to be sufficient. As a public health measure the authors advocate the administration of 2 gm. of sodium iodide over a period of two weeks, the dose to be repeated twice yearly. This treatment prevented the development of goiter in 99 per cent of the children in a region in which goiter was mildly prevalent. In individual cases the presence of pathologic conditions, however, may modify the result of the prophylactic treatment.

SAMUEL KAHN

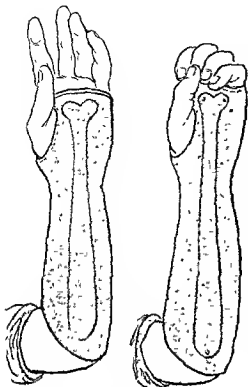
Haggard, W. D.: Toxic Non-Exophthalmic Goiter. *South. M. J.*, 1920, xiii, 506

By the term "toxic non-exophthalmic goiter" Haggard refers to the type of goiter described by Plummer as "toxic non-hyperplastic goiter" as contrasted with toxic hyperplastic or exophthalmic goiter. As a rule toxic non-exophthalmic goiters occur at about the twenty-second year of age while exophthalmic goiters are not observed until the thirty-second year. In the non-exophthalmic type of goiter the symptoms do not develop until a decade after the onset of the goiter itself, while in the exophthalmic type they are noted within a year.

Plummer differentiates two types of the non-exophthalmic group which merge into each other. The first is characterized by the predominance of cardiovascular symptoms and presents a picture similar to that seen in alcoholic or luetic cardiovascular disease. The second type simulates Graves' disease with the exception of the exophthalmos.

In cases of non-exophthalmic goiter the thyroid on pathologic section shows an increase in the parenchyma, often of the foetal type. The condition is probably the product of over-secretion grafted on a goiter already present.

The goiter is probably the result of a secondary infection which occurred in childhood, and the over-secretion is caused by toxic, metabolic, or psychic factors. The toxic factors are represented by



Author's splint allowing flexion of hand

less. In another case the hand was ankylosed in flexion on the wrist. Resection was limited to the carpus, the lower extremity of the bone of the forearm being left intact. In a third case resection in which the pisiform was left in place gave a result which was no better. A fourth patient had a wide excision of the lower extremity of the bone of the forearm which allowed the hand relative freedom of movement. A supportive splint made it possible for the hand to execute movements of flexion. When the carpus was left, even if the loss of bone substance was slight, the functional result was generally poor.

In the only successful resection for arthritis the trapezius, the pisiform, and the lower extremity of the radius were left intact.

The danger of wrist resections lies in the possibility that ankylosis will result. In wrist resections, as Farabeuf first taught, the vessels, nerves, tendons, and muscles must be carefully preserved. During the postoperative period daily passive and active movements are necessary in order to combat muscular atrophy.

A. J. SCHOLL, JR.

Meyer, H.: The Plastic Repair of the Thumb (Der plastische Ersatz des Daumens). *Beitr z klin Chir*, 1920, CLIX, 386.

The author discusses the various methods which have been proposed for the repair of the thumb and

describes two of them in detail. In the first of these two methods the surrounding tissues are utilized. The flap is made as in the stump operation of Schmidt-Krukenberg or according to Luksch's method, and an osteotomy and axis rotation are done. In the second method, either a pedunculated flap, a movable flap of skin of some other part of the body, a bone chip, or a toe graft is used. The method to be employed will depend upon the patient's age, occupation, and social status.

The author advocates the use of the pedunculated flap when the patient is a manual laborer, as this gives a strong working thumb. In the cases of mental workers he does toe-grafting. When it is not necessary to take the patient's occupation into consideration or when the patient is elderly, the splitting or finger-graft method may be tried. If other fingers also are involved by the injury, the finger-graft method is of great value, but for young persons the toe-graft method is preferred. In recent hand injuries the insertions of the small muscles must be preserved if possible, and therefore the dislocation of the middle finger must be prevented. Denuded or mutilated fingers should be covered immediately with body skin. When it is necessary to amputate a finger because of deficient blood supply, the removed bone should be grafted into the abdominal tissues at once and left there for later plastic use. The author reports 4 of his own cases.

W. V. SIMON (Z)

Galloway, H. P. J.: The Open Operation for Congenital Dislocation of the Hip. *J Orthop Surg*, 1920, II, 390.

Galloway attempts to discredit the accepted treatment of congenital dislocation of the hip by reporting the results in 31 cases. He describes Lorenz's teachings of bloodless reduction as "seductive demonstrations," belittles the results obtained by Wilson, and praises and seconds Sherman's "unanswerable line of argument against manipulative reduction." Admitting that orthopedic men will hesitate to adopt the cutting operation for reduction of hip dislocations, he states that although the bloodless method represents a considerable advance over the former diagnosis of the condition as incurable, it does not effect a real cure.

The author lays down the following dogmatic principles:

1. All cases should be treated by open operation, never by manipulation alone.
2. The common teaching that open operation should be reserved for cases in which treatment by manipulation has failed, is wrong.
3. The best age for open operation is between 2 and 3 years.
4. For this operation there are two methods of approach the anterior being the easiest, but the posterior being preferable when exceptional difficulty is anticipated.
5. In single dislocations there is no age limit for open operation.

cision will be. The gland is exposed by deepening the incision and splitting the muscles. The goiter is exposed, the fibrous capsule separated from the anterior surface of the gland, and the field dried. While cold, an electric cautery is then passed through the incision down to the anterior surface of the gland. When the current is turned on the cautery is slowly rocked from side to side, a portion of the gland about the size of a shoe button being destroyed and coagulation of a much larger area being effected.

This procedure may be repeated every few days, larger portion patient is thyroidectomy manifestly obliterate all external evidence of the cauterization

HOWARD A. MCKNIGHT.

Bartlett, W. An Emergency Technique for Thyroidectomy. *J. Am. M. Ass.*, 1920, LXX, 169

Up to the present time the admirable Halsted technique based on anatomical grounds, or some modification of it, has been employed whenever a thyroidectomy has seemed indicated. It has fulfilled all requirements with an assured margin of safety when the patient has been carefully chosen, but the indications for thyroidectomy may be very considerably broadened by the employment of a technique which is based on pathologic principles and makes the minimum demand on the patient's strength. To this end every consideration of a cosmetic nature must be waived, the sole aim being to destroy the greatest amount of thyroid tissue possible. If done in the usual manner this could not be accomplished without risk to life.

The emergency technique contemplates the most direct, rapid, and bloodless approach to the tumor, prevents contamination of the tissues by toxic thyroid fluids, saves the time ordinarily spent in ligat the blood divided

In the past the great danger of thyroidectomy for toxic patients has been due to the fact that the surgeon a fatal patient the safe risks, (2) those who were rejected, and (3) the doubtful class in which most of the unpleasant postoperative surprises occurred. The author's emergency technique is intended for the doubtful class of patients whose condition seems too good for ligation, but to whom no positive guarantee of safety can be given after a classical thyroidectomy has been done.

The preparation for the operation does not vary materially from that generally used. The patient is rested and fed, and morphine and fluids are given to ward off the impending acidosis. She is then taken to the operating room in full possession of her faculties and without further morphine.

The head of the table is slightly elevated, and the site of the intended incision marked just behind the anterior border of the sternomastoid, care being taken not to run down within 1 cm. of the clavicle. A diamond-shaped area is infiltrated about the growth. Infiltration of the subcutaneous fat and muscle planes with 0.5 per cent procaine is sufficient.

The form of incision used has a number of advantages. It allows approach to the tumor by the most direct route, it encounters fewer vessels than the collar incision, it avoids extensive separation of tissue planes, it is in line with the axes of the important deep structures, and it obviates retraction to a very considerable extent. The resulting ridge-like scar lies on a preformed prominent ridge, i.e., the sternomastoid muscle.

The platysma incision corresponds to that in the skin; the ribbon muscles are split longitudinally over the most prominent portion of the growth below

The exposed lobe is caught with clamps and lifted

tation

The upper pole is then divided and the lobe gently drawn toward the angle of the jaw, while the capsule and goiter substance are divided after clamping from above downward. In order to reduce tissue necrosis to the minimum none of the thyroid substance within the grasp of clamps is ligated. To prevent the retention of toxic products no attempt is made to whip over the cut thyroid substance. The instruments are bunched together with a mass of dressing wrapped about them in such a way as to bring pressure to bear on the skin of the neck and their handles. Thus they are lifted upward instead of being allowed to rest on the floor of the defect.

It goes without saying that a wound held open in this manner cannot possibly retain the fluids forming in it; hence the most complete drainage is secured.

The after-treatment consists in giving $\frac{3}{4}$ gr. of morphine when the patient leaves the table to prevent severe after-pain. It is customary to repeat this dose as often as the respiration goes over 20, otherwise restlessness may wear out a damaged heart.

The original dressing is not touched until the postoperative storm, if there be one, is over. After twenty-four hours the clamps are unlocked, except those on the main thyroid vessels, and are allowed to fall off in the next few hours by their own weight.

The operation is over as soon as the lobe is amputated, a fortunate circumstance as the resistance of a toxic patient under local anaesthesia is about gone when this stage of the thyroidectomy has been reached. The operation has been greatly shortened,

disabling equinus deformity and prevents the proper use of the conserved ankle joint. If in injuries of the lower third of the leg Syme's amputation is impossible the site of election is through the middle third of the leg. Amputation stumps below this

of deformities of the hip joint. Early massage and movements of the stump and the wearing of a temporary peg leg as soon as possible are advised. The article is concluded with some practical remarks on weight-bearing surfaces and stump fitting.

LIONEL D. PRINCE

Brat

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The author's method of reaching the crossed ligaments and semilunar menisci has been successful experimentally but has not yet been tried on man. A U-shaped incision is made first, its horizontal portion corresponding to the tuberosity of the tibia. The vertical incisions are then carried two or three finger widths from the base of the patella. The flap formed is thrown back and the patella incised on each side, two other perpendicular incisions being carried up to the site at which the patellar ligament is inserted so that they include a little of the ligament itself. A pear-shaped incision is then traced on the anterior surface of the patella, the patella placed in a vertical position and the incision cut with a Gighsaw. Access to the articular cavity is thus obtained.

In the author's opinion the pear-shaped incision, which is the principal point of the technique, is superior to an S-shaped incision or any lateral arthrotomy and less difficult to execute.

W. A. BRENNAN

Spiers, H. W.: The End-Results of Hallux Valgus Operations: A Report of 96 Cases at the Orthopedic Clinic of Massachusetts General Hospital since 1905. *J Am M Ass*, 1920, LXX, 306.

Because operations for hallux valgus are so often unsatisfactory the author reviews the results of surgical treatment in 96 cases in the hope of arriving at a satisfactory procedure.

The most frequent operation for hallux valgus in the series was resection of the head of the metatarsal bone. Of 78 operations, 61 per cent were satisfactory.

In 8 cases in which only the exostosis was removed the operation was a failure in 75 per cent.

The Kellar operation was done in 7 cases and was successful in all.

In the author's opinion the failure of complete excision was due to the loss of the foundation of the weight-bearing pillars of the transverse arch.

Metatarsalgia, painful plantar callosities, painful ankylosis, and spur formation were frequent sources of trouble. When only the exostosis was removed the relief was of brief duration.

The author strongly recommends the Kellar operation for bunions. In this procedure an inverted U incision avoiding the bursa is made, the exostosis and a good portion of the dorsal surface of the head of the first metatarsal are removed subperiosteally, and the proximal end of the proximal phalanx is excised sufficiently to obtain the correct alignment.

This method preserves the cartilages of the joint in the weight-bearing surface and corrects the deformity by shortening the toe and removing the exostosis. At the same time it interferes little with the muscular attachments. The cosmetic and functional results in all cases have been good.

CARL C. CHATTERTON.

Mayo, C. H.: The Surgical Treatment of Bunions. *Minnesota Med J*, 1920, LII, 326.

Hallux valgus occurs chiefly in women who wear shoes which are too short and have misshapen toes and high heels. A shoe too short or with pointed toes causes the great toe to turn out, while a high heel obviously causes the wearer to walk on an inclined plane. The sesamoid bones become enlarged and at times develop under the head of the fifth metatarsal bone.

Hallux valgus is usually associated with some

be a narrowing of the space between the first and second metatarsal bones rather than wide separation. The overgrowth of bone the author believes is due probably to the same factor that is found in chronic rheumatoid arthritis, that is, a low-grade infection, the local pressure and trauma being predisposing factors since hallux valgus and bunion generally occur in the period of life in which rheumatoid and recurrent infections are most prevalent. Bunions are commonly found on feet with long great toes rather than on those with short toes.

tarsal bones, wedging them apart when the weight is placed on the foot.

Some degree of arthritis is far more commonly associated with flat foot than generally is supposed. A bunion associated with flat foot is serious since the benefit of an operation is less and the recovery much slower than in cases without such a complication.

Many methods have been devised for the operative treatment of bunions. The operation of choice is one advocated some time ago by the author. The

urgent and the surgeon is as certain that pus is present as he can be without finding it by puncture. The technique of exploratory thoracotomy in these cases was described by the author in 1916 as follows:

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res

pleura the upper thoracic cavity is isolated by gauze packs, and the lung, if adherent to the diaphragm, is dissected free. An encapsulated empyema often is found here. If this arca is free, the packs are rearranged, the lung is separated from the costal pleura, and the interlobar fissures are explored. If necessary, another rib is resected. When the pus collection is found it is evacuated and drained across the pleural cavity in the same way as an intrapleural abscess.

The author has operated in this manner on six cases in which numerous punctures failed to locate the pus and the patients were dying of sepsis. Three patients died, one because the encysted empyema was not found (the autopsy showed that the interlobar dissection had reached to within 2.5 cm. of the abscess); one because moribund at the time of operation, the empyema having ruptured into a bronchus, and one as a result of sepsis arising in the parietal wound, some weeks after he had passed from the author's care. In a seventh case exploration was negative and the patient died subsequently from the pre-existent pneumonia.

In massive as in encapsulated empyema Ashhurst operates under local anesthesia with the patient lying prone and resects 3 or 4 cm. of the ninth, tenth, or eleventh (rarely the twelfth) rib. He lays great stress on ample and dependent drainage, believing that the doctrine of through-and-through drainage advocated by his father merely followed as a corollary in cases in which the primary opening was made too high, in other words, that the primary opening should be made at the site of election mentioned, regardless of where the needle has found pus. He opens the chest higher only if an encapsulated empyema is located very high (under the third or fourth rib, for example) as, even if the healthy pleural cavity is opened low down, he believes it is easy to break through an encapsulated empyema at its lowest point, and thus secure dependent drainage.

Irrigations the author regards as unnecessary in the ordinary case. Instillations of Dakin's fluid, he states, may certainly cause disintegration of fibrinous deposits lining the empyema cavity and in very old empyemata may prove advantageous. So far, however, not one of his cases has remained unhealed, and dependent drainage is all that has been provided. From a study of his own operations, 43 in number, he draws the following conclusions:

1. Cases of pleural effusion suspected to be

2. If the fluid found on puncture is serous or seropurulent, thoracotomy usually may be postponed until frank pus has formed as this delay will permit the formation of firmer adhesions and thus prevent complete collapse of the lung when the empyema is opened. Cures of such seropurulent effusions, however, have occurred so rarely without final resort to thoracotomy that attempts to cure the condition by the injection of antiseptics into the unopened pleura are usually detrimental to the patient.

3. If in a case of suspected empyema the symptoms are urgent but pus cannot be found by puncture, exploratory thoracotomy should be undertaken in an effort to locate and drain the pus.

4. The operation of thoracotomy for empyema should be done under local anesthesia and should provide free and dependent drainage secured by the resection of a rib (usually the ninth, tenth, or eleventh) in front of its angle.

5. Postoperative irrigations are unnecessary unless, after several months, the lung shows no tendency to expand, when the use of Dakin's fluid may prove beneficial. When the cavity is small, injections of bismuth paste may effect closure.

6. If the cavity cannot be made to heal by these means, major thoracotomy combined with decortication of the lung and dissection of the pleura should be done. In some cases resection of a number of ribs to permit the chest wall to collapse in part and meet the expanding lung may be necessary.

Among the author's first nine patients there were five deaths (three those of infants less than a year old). Since adopting the principle of wide and dependent drainage under local anesthesia, Ashhurst has operated on thirty-four patients. Four died—one, because the encapsulated empyema was not found; the second, from gangrenous stomatitis (noma), and the third and fourth from sepsis arising in the thoracic wound and apparently brought on by irrigations some weeks after the patient had passed from the author's care.

The average time for closure of the thoracic wound in the cases of patients who have been traced was just over nine weeks, and in those who remained under the writer's care, just over seven weeks. Final closure was secured in all cases traced (thirty-one of the thirty-three patients who recovered) without an Estlander or similar operation.

Lillenthal, H.: Empyema: A Syllabus of Operative Treatment. *Ann Surg*, 1920, lxxi, 87

In this paper the author has attempted to construct a table for the standardization of operative methods in all the usual forms of empyema of the thorax. Tuberculosis, syphilis, and actinomycosis, etc., are not included.

He believes that when empyema cavities are simple and single they may be treated by ordinary drainage with subsequent disinfection, but that the more complicated cases require full exploration with the simplification of the contour of the cavity and mobilization of the lung.

muscles. If the injury to the joint center is not extensive, the rapidity of movement may be diminished only slightly.

In infantile paralysis deformities of the lower extremity are frequent, especially those of the sole of the foot. Deformities of the knee joint, which are rather rare, consist of an irreducible flexion varying from 10 to 15 degrees which is mechanically fixed by an osseous deformity and retraction of the posterior part of the capsule. In hemiplegic subjects the degree of limping depends on the number of joints involved. Generally the foot is in an equinus position and there is almost constant partial flexion of the knee. In some cases the foot is fixed and constantly flexed, the subject walks as if the knee were ankylosed in flexion. The hip joint is the only mobile articulation. In cases of fixation of the hip the leg serves merely as a means of stationary support.

There are several important phenomena which occur after muscular contraction of the lower extremity. The swinging of the shoulders, which is

due to retarded action of the pelvic muscles, is either an isolated movement or coincident with the general movement. The shoulder movement is probably a compensatory movement to preserve balance. Contraction is followed also by a muscular unbalance which is characterized by a typical elevation of the deformed foot 3 or 4 degrees above that of an equinus.

Active movements of the knee and hip augment the muscle value and develop rapidity of contraction. Passive movements should be followed by active movements in order to stretch the shortened muscles.

In the treatment of young children mechanical appliances should be used to keep the foot in flexion. Contracture of resistant muscles may be overcome by the application of several successively straighter plaster casts. Mechanical fixation of the knee will shorten the time of treatment and give a better end-result. Tenotomy also will shorten it, but is possible only in severe cases of equinus.

V. J. SCHOLL, JR.

SURGERY OF THE SPINAL COLUMN AND CORD

Fischer, O. A Contribution to the Pathology of the Sympathetic Nervous System in Cervical Lesions.

The author reports two cases of gun-shot injuries from which he draws conclusions regarding the pathology of the sympathetic system. In the first case there was an injury in the region of the fourth and fifth cervical vertebrae and a grazing shot-wound of the right border of the cervical cord. The symptoms of the injury to the right spinal sympathetic were ptosis, myopic pupils, weeping eyes, and infection of the conjunctiva. Other symptoms were loss of function of the sweat glands of the neck, loss of pupillary reaction to adrenalin or cocaine, and hyperaesthesia of the neck in the region of the third and fourth cervical vertebrae. From the position of the bullet it was evident that the cervical sympathetic was intact and that only the central sympathetic fibers in the cord were injured.

In the second case there was a bullet wound on the right side near the sixth dorsal vertebra. The symp-

to about the fifth dorsal segment. It was evident that the lesion involved the sympathetic ganglion and affected all the segments lying above it.

The author's views are confirmed in the literature. The sympathetic nervous system regulates sensibility, hypofunction of the system resulting in hyperaesthesia and vice versa. The experiments of Trendelenburg and Bumke also confirm these conclusions. That nicotine is a specific poison to the sympathetic is evident from other studies. It leads first to stimulation and then to paralysis of the nerves.

cervical sympathetic.

3. Lesions of the sympathetic ganglia result in disturbances of the sensibility of the skin above the lesions and motor disturbances which, with the simultaneous sensory disturbances, are attributable to reflex influences of the gray matter of the spinal cord.

4. The sympathetic fibers in the cervical cord lie in the ganglion and are straight.

5. When these central fibers are injured the pupils react in the same manner as following a lesion of the sympathetic ganglia in the thorax or the cervical sympathetic.

From his experience and experiments and from a review of the literature Frank concludes that striated muscle is innervated directly by the sympathetic system. In the author's opinion the sympathetic

injury to the right cervical sympathetic extending

foreign body observed at bronchoscopic removal. This routine examination has enabled them to locate non-opaque bronchial foreign bodies from the physical signs with considerable accuracy. The history of the case, a peculiar asthmatoïd wheeze, paroxysmal cough, dyspnoea, and fever constitute the chief diagnostic indications of the presence of such foreign bodies. The physical examination of the chest usually reveals lessened expansion on the affected side and a peculiar impaired resonance to percussion which the authors call "muffled tympany." When secretions have accumulated distal to the obstruction or an abscess has formed, marked dullness is present. The breath sounds are greatly diminished and later are usually absent. The unobstructed side is somewhat fuller and harsh breathing is heard over it, which in some cases is associated with very loud snoring, snapping, and bubbling bronchial râles.

The roentgen findings reported by Manges are in accord with the pathology and physical findings and offer valuable information as to the presence and location of a foreign body, even though it may not be visualized, and as to the nature of the pathological condition present. These findings are summarized as follows:

1. In the early stages of the reaction to a foreign body in the bronchus there is often over-distention of the lung on the side of the obstruction, the enlargement of the bronchial lumen during inspiration allowing the passage of a small amount of air, the escape of which during expiration is prevented by the diminution of the bronchial lumen. Thus a moderate distention of the affected side results—an acute obstructive emphysema.

2. The three characteristic roentgenographic signs of this condition are (1) increased transparency of the affected side; (2) depression of the diaphragm on the affected side, and (3) displacement of the heart and mediastinal structures away from the affected side.

3. The unusual clearness of the obstructed side and the comparative clouding of the free side have led many observers to localize a non-opaque foreign body erroneously.

4. With the development of drowned lung or lung abscess distinct shadows of the pathological condition allow the definite localization of the non-opaque foreign body. To wait for this development, however, may be dangerous, if not fatal.

5. The possibility of a shifting of the foreign body must always be kept in mind.

6. The roentgenologist should know the salient points of the history and interpret his findings as regards non-opaque bronchial foreign bodies only after consultation with the physician who examined the chest. In this way much confusion may be avoided and many new facts may be learned.

A number of detailed case reports with roentgenograms taken before and after the removal of the foreign body are included in the article.

ADOLPH HARTUNG

HEART AND VASCULAR SYSTEM

Mocquot, P., and Costantini, H.: Wounds of the Heart with Delayed Symptomatology, A Special Clinical Type of Heart Wound; Secondary Hæmopericardium (Plaies du cœur à symptômes retardés; une forme clinique spéciale des plaies du cœur, l'hémopéricarde secondaire). *Rev. de chir.*, Par., 1920, lviii, 257.

Until recently a heart wound without threatening hæmorrhage either externally or into the pleura was not considered possible. It is now known, however, that a number of heart wounds produce only a slight immediate hæmorrhage, the diagnosis being made only later, sometimes not until after recovery from the injury. An immediate fatal hæmorrhage does not necessarily follow a serious heart wound. There are so-called "dry" wounds of the heart.

The authors report a case of their own and cite ten from the literature in which a wound of the heart was followed by an interval free from symptoms and then by alarming collapse due, as a rule, to hæmopericardium.

In all of these cases of late hæmopericardium the authors believe the region injured is the ventricular region. An auricular wound is always penetrating because of the thinness of the auricular wall. Therefore bleeding occurs at once. In a narrow jagged wound of the thick ventricular wall, however, a clot may form and effect a temporary or permanent hæmostasis. Thus a dry wound may heal spontaneously. When such a clot becomes detached, sudden hæmoperitoneum is produced like that in the cases described.

In almost all of the cases reported the clots were noted in the pericardium. Apparently the blood does not behave in the same way here as in the pleura and it is reasonable to infer that the pleural serosa possesses qualities which the pericardium lacks.

The authors discuss the various diagnostic symptoms of hæmopericardium. Among these the radioscopic demonstration of immobility of the cardiac and pericardiac shadow is of very great importance. Immediate surgical intervention to empty the pericardium and obtain hæmostasis is indicated. For such an operation the authors believe that a median thoraco-abdominal incision such as that described by Duval and Barnaby offers the best approach to the heart. In the authors' case suturing of the wound in the heart with catgut was effected easily and hæmorrhage was insignificant.

WILLIAM A. BRENNAN

Tuffier: Surgery of the Heart (La chirurgie du cœur). *Presse méd.*, Par., 1920, xxviii, 517.

A wound of the heart with external hæmorrhage, hæmopericardium, or hæmothorax demands immediate operation. When such wounds are untreated the mortality is considerably higher than when treatment is given. Statistics show also that strict asepsis is necessary in the operation as the

SURGERY OF THE NERVOUS SYSTEM

Tranter, C. L. Formication Test in Peripheral Nerve Injuries—Its Interpretation. *California State J. Med.* 1925 XLIII 218

Tranter's paper is based on his experience with over 1,000 cases of nerve injuries observed from a few days to eighteen months after the receipt of the wound, and upon the observations of the work of Tinel and his associates.

Formication does not appear immediately after an injury even if there has been an immediate suture, but is noted only after a lapse of from four to six weeks. The rate of regeneration may vary more or less according to the general health, the age, and the recuperative powers of the individual and the character of the injury.

Two determinations necessary for the correct interpretation of the test are

1. A comparison of the intensity of the formication elicited at the level of the lesion with that elicited at the lower limit of the zone of formication.

2. Measurement of the length of the zone of formication and the determination of the average daily rate of regeneration.

The lower limit of the zone of formication should

relaxation of the nerve and should not be cold. The patient should not be allowed to look at the region percussed. To determine the average daily

satisfactory, the intensity of formication below the level of the lesion is always as great as that above.

Complete interruption is indicated by fixity of formication at the level of the lesion on repeated examinations or by formication of diminished intensity below the level of the lesion and a subnormal rate of regeneration. Either finding should warrant surgical exploration. The formication test gives definite evidence of regeneration long before muscle reflexes appear and before voluntary motion becomes possible.

CARL R. STIEVEKE

Lewis, D. Principles of Peripheral Nerve Surgery. *J. Am. Med. Ass.* 1920, LXXV, 73

When a nerve is divided, definite an

The changes that occur in the distal segment after division are as important as those occurring in the proximal segment. Nerve impulses cannot be transmitted without neuraxes, but the neuraxes cannot reach their terminal distribution unless bands or conduits are formed along which these can pass.

In the repair of a divided nerve it is essential first of all to provide easy access for the developing neuraxes to the distal segment. Neuromata develop in nineteen days even when there is no hemorrhage or infection.

Scar tissue forming after the division of a nerve

the

Success in peripheral nerve repair depends on

Accurate approximation will prevent to a great extent imperfect redistribution of developing neuraxes. Imperfect redistribution occurs to some slight degree after every suture, but may be overcome by reeducation or degeneration of the fibers which have made wrong terminal connections.

The length of time intervening between the division of the nerve and the repair is an important factor in determining the success of nerve suture. When nerve suture is performed early and the period

End-to-end suture is the only procedure that can be relied on to re-establish the continuity and function of a nerve after division. Transfixation sutures do not disturb the nerve pattern, but epineurial sutures are the most satisfactory. The sutures

it is combined with displacement of the nerves and a change in the position of the part, will often permit end-to-end suture even when the defect is long. Autogenous cable transplants and tubulization with fascia are used when there is wide separation but give very poor results, in the author's twelve cases treated in this way no recoveries were obtained.

In civil practice a case of nerve severance should be operated upon sooner, without waiting for partial recovery. After operation careful supervision, exercise, and passive motion of the part are necessary.

HOWARD A. MCKNIGHT

or following gastrotomy is useless, the filiform bougie always passes more easily from above downward under direct endoscopy, and if this fails, no better results will be obtained by retrograde endoscopy.

WILLIAM A. BRENNAN

Judd, E. S.: Oesophageal Diverticula. *Arch Surg.* 1920, i, 38

The author states that diverticulum of the oesophagus is not an uncommon condition, although only about 200 operative cases have been reported; this number includes the cases reported from the Mayo Clinic.

The two common types of diverticula are the so-called pressure and traction diverticula. Traction diverticula are usually multiple and often symptomless until they are converted into the traction-pressure type. This conversion takes place

in about 7 per cent of the cases. The author has observed 2 cases.

as diverticulum, stricture, obstructing cancer, and cardiospasm.

In some cases of oesophageal diverticula dilatation is the only treatment necessary but in the majority of instances surgery is definitely indicated. The two-stage operation rather than the one-stage intervention is recommended because of its simplicity and infinitely greater degree of safety as neither the oesophagus nor the sac is opened and the surrounding tissues and spaces are not exposed to infection until firm granulations have formed. The ultimate functional results have been very satisfactory.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Downes, W. A.: The Management of Direct Inguinal Hernia. *Arch. Surg.* 1920, i, 53

All surgeons agree that in the indirect or oblique hernia the results of surgical treatment are excellent, provided the operation is performed properly and according to one of the approved methods. No such claim can be made for the operative results in cases of direct hernia, nor can it be said that there is a standardized operation for this condition.

The difficulty lies in selecting the cases suitable for operative treatment. As a rule, the patients in whom recurrence is almost sure to take place belong to a definite group. Usually such patients are thin and have poorly developed muscles in both lower abdominal quadrants. To this group may be added certain others who have accumulated considerable fat over the lower abdomen.

The patient with a direct inguinal hernia should be carefully studied before operation is recommended. If the condition of the lower abdominal muscles is such that a fair chance of obtaining a cure cannot be offered, the question of operation should be deferred for the time being and the patient advised to take systematic exercises for six months or a year.

Direct hernia occurs most often in men between the ages of 25 and 45, but is occasionally seen in younger persons and even in children. It is rare in women. Poorly developed or deficient musculature in the lower half of the abdominal wall may be said to be the underlying cause in practically

condition of the lower abdominal muscles, (3) the side on which the hernia occurs (direct hernia is often bilateral); (4) the situation of the hernia (the direct hernia occurs low down over the pubic bone except in very early cases in which the sac has not descended to the external ring); (5) the character of the globular swelling (in direct hernia it does not tend to enter the scrotum even if large and is easily reducible); and (6) the condition of the lower portion of the inguinal canal.

In the selection of the operative technique as much care is necessary as in the selection of cases for operation. While the great majority of these herniæ fall into two general groups—the usual form, in which the protrusion occurs through the normal weak portion of the transversalis fascia, and the combined direct and indirect type—an operation which will prove satisfactory in one case may be wholly inadequate in another.

The author makes the usual skin incision, carrying the lower angle down to the pubic bone, splits and retracts the aponeurosis, exposes Poupart's ligament, and makes traction on the cord to be sure that no indirect hernia is present. Next, he exposes the sac, strips the fat gently from its surface, ligates it flush with the transversalis fascia, and removes the excess. He then opens the sheath of the rectus, sutures the muscle to Poupart's ligament with kangaroo tendon, and does the classical Bassini or Andrew's operation.

HOWARD A. MCKNIGHT.

Russell, R. H.: Infantile Hernia, Enormous Hernia, and Gibbon's Hydrocele. *Med. J. Australia*, 1920, i, 505.

The author disagrees with Lockwood's view that in infantile hernia the processus vaginalis is obliterated high up in the region of the internal ring but open all the rest of the way down to the tunica

course

In the diagnosis the following points must be considered: (1) the patient's age and sex; (2) the

states that the bovine lesion is not identical with the lesion in man in its general texture or the details of its histopathologic structure. The bovine type differs from the human type by its cyst formation, its circumscribed location, and its benign character as well as in its morphological and biological characteristics. Moreover, while the parasite in the two lesions shows the same elementary structure the organism found in the bovine lesion seems to lack the uniform and definite microvesicular aspect and is not malignant. In the bovine type the multilocular aspect easily passes into the common

glands and viscera.

alveolar echinococcosis in man. Experimental investigation alone will be able to answer this long debated question. In the meantime much valuable information might be obtained from a study of the etiological and pathogenic conditions of outbursts of alveolar echinococcosis in countries such as Uruguay and the Argentine Republic.

W. A. BRENNAN

Blank, G.: The Blood Findings in Hyperthyroidism and Struma (Blutbefunde bei Hyperthyreose und Struma). *Deutsche Arch. f. Klin. Med.*, 1920, xxvii, 16.

The author points out the difficulties in examinations of the blood, especially in hyperthyroidism, and states that even in normal persons decided

cells, up to 1 per cent, large mononuclears and transitionals, up to 7 per cent, and lymphocytes, from 25 to 35 per cent.

Blank studied 17 cases of true Basedow's disease, 28 cases of hyperthyroidism resembling Basedow's disease, and 41 cases of so-called ordinary struma.

Polycythemia was present in one-third of the cases of hyperthyroidism or twice as often as in the cases of struma. This the author believes was due to increased

organs. In 3

from five to

One-half of

showed thrombopenia but this condition was absent in the cases resembling Basedow's disease.

In 1 case the blood platelets were increased five days

after the operation. The red cells, however, remained

in 74 per cent of the cases, but in some showed marked deviations.

In most serious cases Kocher has found a leuco-

lymphocytosis and a leucopenia. In between 11 and 12 per cent of the cases of true Basedow's disease a basophilic staining of the reds was noted. This never occurred in the cases of struma. In 50 per cent of the cases of struma and hyperthyroidism polychromatosis was present. In the author's opinion this was due to the toxic effect of the secretion of the thyroid on the bone marrow. In 1 case of adiposity in which thyroid extract caused a reduction in weight basophilic red cells were found. In another case of acute strumitis these cells were associated with polychromatosis. The author therefore concludes that Kocher's blood picture is atypical.

The influence of exophthalmic goiter or iodine treatment on the blood picture is not discussed in this article. KOCHER (2)

Milone, G.: The Value of Surgical Intervention in Certain Cases of Hypochondriasis (Sull' utilita dell'intervento chirurgico in alcuni casi di delirio ipochondrico). *Riforma med.*, 1920, xxxvi, 562.

Following a review of the literature regarding

anesthesia and the patient made an excellent physical and mental recovery. In another case operation revealed only a very slight catarrhal endometritis which was entirely out of proportion to the symptoms of which complaint was made. In the third case the patient believed that there were living bodies within the abdomen but operation demonstrated only a slight inguinal hernia. In both the second and third cases operation gave immediate relief but the aberration returned and one of the patients committed suicide.

has been much dissatisfaction with the results obtained by the no-loop posterior gastro-enterostomy as many patients complain of uncomfortable sensations and vomiting, and are in poor health. The normal mechanism of the duodenum has been disturbed and the duodenal contents mix with the food too soon.

The author has overcome these difficulties by first performing a long loop gastro-enterostomy and then anastomosing the proximal and the distal loops of jejunum 3 or 4 in. below the gastro-enterostomy.

The distal loop of jejunum between the gastro-enterostomy and the jejunostomy functionates as the first portion of the duodenum, while the double jejunum at the anastomosis acts as the second portion of the duodenum. Accordingly the duodenal contents do not mix with the food until they reach the double portion of jejunum, and jejunal ulcers do not occur.

The author's experience over a period of nine years has been that patients operated upon in this way gain in weight very rapidly, never have hyperacidity, and never suffer from the uncomfortable symptoms which so commonly follow the no-loop gastro-enterostomy.

H. K. BEGG

DeMartel, T.: Gastric Resection. N. Y. C. T. S. S. (Gastrectomy) Presse

The author outlines a new method of approach and technique in performing a gastrectomy for malignancy or extensive ulceration.

During the pre-operative period the mouth and teeth are thoroughly cleaned and a daily stomach lavage is given not only to cleanse the stomach, but also to accustom the patient to these measures in case of postoperative necessity.

If ether is used as the anæsthetic, morphine and scopolamine are administered to quiet the respiration and decrease secretions. Patients operated on under spinal anæsthesia are given a small amount of ether in addition. Spinal anæsthesia does not pro-

often unsatisfactory. Local infiltration, which may be satisfactory in a gastro-enterostomy, is insufficient for a gastrectomy.

The patient is placed on the operating table with the head and upper part of the trunk in a horizontal position and the hips and lower extremities at an angle of 45 degrees. A median incision is made from the sternum to the umbilicus. If a gastrectomy is to be done, the lower pole of the incision is continued at a right angle, thus making a triangular opening. This gives an excellent exposure of the pylorus and is also very satisfactory for operations on the gall-bladder and bile ducts.

More than the usual amount of time is required to make the incision and close the opening, but this is compensated for by the facility with which the

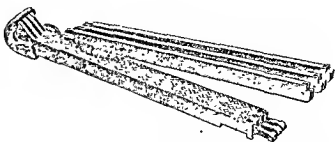


Fig. 1. The author's crushing forceps in position for applying

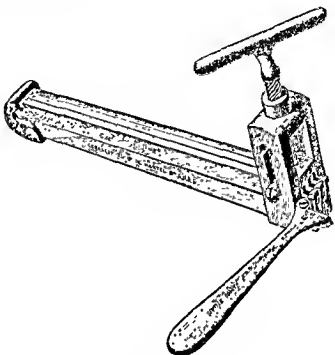


Fig. 2. The forceps and lock in place and ready for closure.

operation may be performed. The omentum is stripped from the colon and incised at the area in which the resection is to be done and the large vessels on the greater and lesser curvature of the stomach are ligated and cut. The opening on the lesser curvature of the stomach created by the ligation and cutting of the vessels is enlarged to accommodate the author's *ecraseur*, or crushing forceps. This forceps is composed of six blades with a detachable clip and maintaining the two ends and the stomach is sectioned between the others. Sufficient tissue is left on the proximal side to permit suturing of the opening. The pyloric end is then raised and a section made through the duodenum. This is done either by clamping and infolding, or by tying *en masse* and infolding after crushing.

The majority of accidents following gastrectomy are due to poor closure of the duodenum. Peritoneal surfaces should be approximated accurately. The duodenum should be completely covered on its posterior side and, with the denuded surface of

In cases of hæmorrhage due to an injury it is necessary first to control the bleeding point. The author then gives not more than 500 ccm of blood, which amount he repeats later.

Transfusion yields favorable results in cases of gastric ulcer. If the blood pressure falls below 100 the blood should be transfused slowly. Not over

Postpartum hæmorrhage and ruptured extra-uterine pregnancy are sometimes indications for transfusion.

Transfusion is indicated before operation in anæmia due to bleeding fibroids and malignancy, and following operation in the anæmia of convalescence.

Primary pernicious anæmia is relieved but not cured by splenectomy.

While it cannot be said positively whether or not transfusion is indicated in all hæmorrhage conditions the author believes it is beneficial and is indicated in infections, intoxications, and debilitated conditions such as hæmophilia.

If a subcutaneous injection of from 15 to 20 ccm. of whole blood does not control bleeding in melena neonatorum, an injection of from 35 to 125 ccm. is a specific.

Purpura is arrested more frequently by transfusion than by any other method, while leukæmia is only temporarily controlled by it.

The dangers of transfusion are

1 Over-distention of the heart. This is an ever-present danger and is due usually to too rapid administration of the blood. It is evidenced by nausea, blueness of the lips, a cold, clammy skin,

4 Hæmolysis and agglutination. All human bloods fall into four groups. Those in the same group do not hæmolyze nor agglutinate each other. Transfusion should always be preceded by agglutination tests.

MARCUS H. HOBART

BLOOD AND LYMPH VESSELS

Costantini, H. The Treatment of Wounds of the Important Vascular Trunks of the Neck, the Axilla, and the Supracardiac Mediastinum (Traitement des plaies des gros troncs vasculaires du cou, de l'aisselle et du médiastin sus-cardiaque). *J. de chir.*, 1920, xvi, 150.

The treatment of war wounds of the great vascular trunks has contributed much that is new to the practice of surgical therapeutics. One fact which is now admitted is that to treat a wound of an impor-

tant vessel it is necessary to make very large openings and long incisions.

Costantini discusses only fresh vascular wounds. Injuries of the neck may occur in the central or thyrohyoid portion, in the lower or supraclavicular portion, or in the upper portion. In wounds of the first type the incision is made along the anterior border of the sternocleidomastoid muscle and, if necessary, is prolonged to the sternum. By means of such an incision Costantini has been able to place two ligatures on the primary carotid and a ligature on the facial within the digastric. In supraclavicular injuries an incision parallel to the clavicle may suffice or may be made to supplement an incision along the anterior or posterior border of the sternocleidomastoid muscle or both, the incision along the posterior edge being an incision of choice. When the lesions are situated beneath a plane passing through the upper edge of the clavicle it may be necessary to section or disarticulate the

the upper portion of the neck, Costantini refers to his article in the *Presse médicale* for January, 1918.

Axillary wounds are divided into those of the subclavicular region and those of the axillary fossa. In the treatment of the former a long incision is made beneath the clavicle from the deltoid-pectoral space to the internal end of the bone, the pectoral muscles are sectioned, and the subclavicular muscle is split. Transverse incisions at the ends of the long incision may also be necessary. In cases of wounds in the axillary fossa the classical incision for ligation of the axillary artery in the axillary fossa will usually suffice.

and opening of the space with Tuffier separators.
W. A. BRENNAN

Proc. ...

1920, 343

Blood pressure measurements and pulse tracings (Erlanger) made before and after operations in many cases of aneurism revealed the following facts:

Venous aneurisms do not influence either the circulation of the injured extremity or the general circulation. Arteriovenous aneurisms which are not

involves the region of the hepatic flexure; a large S-shaped incision on the left side when the growth is found in the region of the splenic flexure; a split-muscle incision on the left side for cancer of the descending colon or sigmoid; and a midline incision above the umbilicus for tumors near the center of the transverse colon.

2 The section of bowel involved by the growth and operative procedure must be mobilized very fully

3. In surgery of the large bowel side-to-side anastomosis with closure of both bowel ends by crushing, ligating, and invaginating with Pagstecher linen is indicated. The mortality of such an anastomosis is only one-half that of end-to-end anastomosis.

Cases without obstruction require only one operation, but when the symptoms of obstruction are noted the three-stage operation is best, i. e., colostomy, removal of the growth, and closure of the colostomy. The three-stage operation is preferable to the Mikulicz operation.

In cases of carcinoma of the rectosigmoid the

of the extent of the involvement the entire rectum should be removed

In the excision of carcinoma of the lower 4 in. of the rectum as much of the rectum should be left as possible after splitting the rectum and removing the coccyx. If the rectum is extensively involved, the Kraske operation with complete removal of the rectum and the formation of a sacral anus is necessary. On the whole, the tube resection should be discarded

Two case reports are given. CARL R. STEINKE

D'Agostini, F.: The Diagnosis of Perforation of Meckel's Diverticulum and Observations Concerning Diverticulitis in General (Contributo alla diagnosi della perforazioni del diverticolo di Meckel e delle diverticolite in genere) *Riforma med.*, 1920, xxxvi, 565.

The author does not discuss Meckel's diverticu-

The author believes, however, that such a diagnosis is possible if the anatomical differences in the

tunics of the intestine, is more reduced and rudimentary in its strata and poorer in vessels because of its vestigial nature. Inflammation in either the appendix or the diverticulum originates in the

mucosa, but in the case of the appendix the lymphatic system is involved. Perforation is general and equal from the vent peritoneum precedes the appendicular lesion and is characterized by more or less intense local pain in the right iliac fossa.

Because of the poorer supply of lymph vessels in the diverticulum symptoms preceding diverticular perforation pass unobserved and perforation results in a sudden diffuse peritonitis without any history seat of pain is also of the appendix.

two conditions is most important as a lesion of the diverticulum demands immediate operation whereas in cases of appendicular lesions expectant treatment may be given.

WILLIAM A. BRENNAN

Stone, H. B.: Some Plastic Operations on the Rectum. *Surg., Gynec., & Obst.*, 1920, xxv, 608

This article reports four operative methods.

1. A method of clearing defective Whitehead operations by mobilizing the skin about the anus and shifting it upward

2. An operation for annular strictures based on the principles of the Heinecke-Mikulicz operation.

3. An operation for tubular strictures in which a flap of vaginal mucous membrane is shifted to the rectum to enlarge the amount of stricture.

4. An operation for recto-urethral fistula consisting of the establishment of suprapubic drainage followed by the mobilization of the whole lower rectum as in an exaggerated Whitehead operation. This permits exposure and closure of the urethral opening. The portion of the bowel containing the fistula is then amputated and a closure made of the perineum and mucocutaneous margin.

Crile, G. W.: Cancer of the Rectum. *J Am M Ass.*, 1920, lxxv, 236.

From a study of the literature and his own series of cases of cancer of the rectum Crile found that the principal cause of death in this condition is infection and the absorption of toxins from the feces. Therefore the first surgical step should be the complete diversion of the fecal stream by a preliminary colostomy. As a rule this should be performed under

The incision for the Littlewood incision)

for exploration. A sharp angulation of the colostomy may be obtained by inserting a short flanged glass tube under the loop of the colon and over the surface of the skin. A wide excision of the growth should be made after a week or longer. At first, infection of the field may be controlled by packing with well wrung-out iodoform gauze, but as soon as the suture line is secure the Carrel-Dakin method is indicated. The wound must be kept clean at all times.

In cases of hæmorrhage due to an injury it is necessary first to control the bleeding point. The author then gives not more than 500 ccm. of blood, which amount he repeats later.

Transfusion yields favorable results in cases of gastric ulcer. If the blood pressure falls below 100 the blood should be transfused slowly. Not over 400 ccm. should be given.

If in postoperative bleeding the bleeding point is not accessible, the transfusion should be begun before anaesthesia is induced. After from 100 to 150

Postpartum hæmorrhage and ruptured extra-uterine pregnancy are sometimes indications for transfusion.

Transfusion is indicated before operation in anæmia due to bleeding fibroids and malignancy, and following operation in the anæmia of convalescence.

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For a discussion of the treatment of injuries in the upper portion of the neck, Costantini refers to his article in the *Presse médicale* for January, 1918.

Axillary wounds are divided into those of the subclavicular region and those of the axillary fossa. In the treatment of the former a long incision is made beneath the clavicle from the deltoid-pectoral space to the internal end of the bone, the pectoral muscles are sectioned, and the subclavicular muscle is split. Transverse incisions at the ends of the long incision may also be necessary. In cases of wounds in the axillary fossa the classical incision for ligation of the axillary artery in the axillary fossa will usually suffice.

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W. A. BRENNAN

Prusik, B. K.: Injuries to Blood Vessels and Their Influence on the Peripheral Circulation. III. (Gefässverletzungen und ihr Einfluss auf den peripheren Blutkreislauf. III.) *Casopis lek. Cesk.*, 1920, lx, 269, 345.

ulation of the injured extremity or the general circulation. Arteriovenous aneurisms which are not

Inflation of the large intestine or of the stomach by effervescent powder is sometimes necessary in addition to the pneumoperitoneum. Inflation is contra-indicated by meteorism and suppuration. The method is especially valuable for detecting intra-abdominal tumors, postoperative inflammatory carcinomatous pockets, and peritoneal tuberculosis in children. In cases of tuberculosis the air is allowed to remain in the abdomen for therapeutic reasons.

Diseased and changed gall-bladders, unless shrivelled up, are almost always evident, but the gall-bladder contents are not visible unless calcium stones are present. The early diagnosis of cancer of the

art
the former X-ray examination, but will supplement it

method.
conditions
not replace
GRAVITY (2)

Stein, A., and Stewart, W. H.: Pneumoperitoneal Roentgen-Ray Diagnosis. *J. Am. M. Ass.*, 1920, lxxv, 7.

In 1919 Stein and Stewart adopted pneumoperitoneal roentgenography in order to diagnose abdominal lesions more accurately. Since that time they have so improved the technique that they are now able to show the parenchymatous organs, their mutual relations, and their pathologic changes distinctly. The procedure has been utilized in 80 cases with no untoward effects. The ages of the patients varied from 4 to 74 years. The practicability of the method in the cases of children is shown by a recent diagnostic inflation of the abdomen of a 9-year-old boy. In this case, the presence of a mass on the right side, in the region of the diaphragm, was suspected but was disproved by the inflation.

The only apparatus necessary for pneumoperitoneal roentgen-ray diagnosis is a lumbar puncture needle, a rubber tube, and an oxygen tank. The lumbar puncture needle and the rubber tube having been thoroughly sterilized and the tube connected with the oxygen tank, the apparatus is ready for use.

The patient is prepared as for an roentgen-ray examination by a thorough cleansing of the bowels and emptying of the bladder just before the inflation is begun, and $\frac{1}{4}$ gr. of morphine is given half an hour previously.

The needle is usually inserted in the median line

unnecessary. Merely taking a fold of the skin tightly between the fingers is sufficient to counteract any pain incident to the introduction of the needle.

The needle is slowly inserted as far as the fascia. Then, by very gentle pressure, it is eased through the fascia and peritoneum into the abdominal cavity. The free end of the rubber tube having been connected with the needle, the oxygen is

allowed to flow gently into the abdominal cavity. The amount of gas varies from 2 to 4 liters according to the requirements of the particular case.

The air or gas used in the application of this method is not sterilized.

In the authors' experience the method has had no unfavorable effects. The elasticity of the intestine permits it to recede before a sharp intruding body such as a needle.

About one-third of the patients have complained of marked pain in the shoulders following distention of the abdomen to its full capacity. No heart symptoms except a slight rise in pulse were noted.

Recently the authors have employed the deflation method to relieve the patient of real or imaginary pain in connection with the procedure. After the patient has been brought back to bed the lumbar puncture needle is reinserted in the same manner as before, so that the air may escape through it. Before the adoption of the deflation method it was found that occasionally the pain did not begin until late in the evening. In this event the foot of the patient's bed was elevated in order to confine the oxygen to the lower pelvis and reduce the pressure against the diaphragm.

Pneumoperitoneum demonstrates all the parenchymatous organs which heretofore have not been rendered sufficiently plain in the roentgenogram. The authors have been able to show the liver and, in many instances, pathologic enlargements and deformities of the gall-bladder. In several cases gall-stones, different varieties of splenic enlargement, and cysts of the liver, pancreas, and ovaries were demonstrated, while in others the female genital organs in their entirety and tumors of these organs were shown.

Probably one of the most distinct reproductions is the renal outline. When used in conjunction with pyelography, pneumoperitoneum accurately outlines the renal pelves and calices and at the same time shows in detail the renal structure, its enlargements, and deformities.

Changes of the vertebral column are also much more clearly revealed by this method.

The contra-indications to the use of pneumoperitoneum are acute appendicitis and peritonitis. Patients who have used alcohol to excess do not tolerate the method well.

The procedure should not be employed indiscriminately but should be reserved for suitable cases. In trained hands and when used with a proper technique, it yields the most gratifying results.

GEORGE W. HOCHSTETTER

Reed, C. A. L.: Some Typical Recoveries in Iowa from Chronic Convulsive Toxemia (Epilepsy) following the Surgical Correction of the Abdominal Viscera. *J. Iowa State M. Soc.*, 1920, x, 204.

Constipation with its associated anatomical disturbances may produce the typical attacks seen in epilepsy. These cases usually bear out the following facts: (1) there is a constant relationship

ROENTGENOLOGY AND RADIUM THERAPY

Shearer, J. S.: The Physics of the Roentgen Ray.
Arch Dermal & Syph, 1920, n 5 1, 664

Roentgen rays are electromagnetic waves due to electromagnetic action originating in a disturbance of the electrical components of atoms. Their vibration frequencies are greater and their wave lengths much shorter than those of ordinary light, but their velocity of propagation and origin are the same. In their production the electrons are separated from matter (1) by breaking down gas molecules in a vacuum tube, and (2) by shaking them from the atoms of a very hot metal. The first method was that of the older type of gas tube, the second, that used in the Coolidge tube.

The condition necessary to produce rays is a sudden changing of the velocity of the electrons, i.e., starting or stopping. In the operation of a roentgen-ray tube electrons in enormous numbers are separated from atoms and by reason of their electric charges are given great speed. The roentgen rays are produced when they strike the hard metallic surface of the anode or target. For a target of given material only two operating factors need concern the therapist. The nature and the quantity of radiation is absolutely fixed by the number of electrons used per second and their striking speed. A properly calibrated millimeter tells the relative number of electrons, and the electrical difficulty of driving them through the tube indicates their speed. The latter is indicated by the length of spark the electrical discharge will cross in the air with the same amount of current needed to pass through the tube.

As a measure of the quantity and quality of the rays, the following effects produced by them have been used: (1) the photographic effect;

This can be done by passing rays through crystals. Such analysis of the roentgen-ray output of a tube has been made at various operating voltages. Three important facts are evident from this study: (1) the energy of all wave lengths in any low voltage curve is much increased when the voltage is raised; (2) raising the voltage adds short waves not present at lower voltages, and (3) the wave length for which the energy is a maximum is shorter at the higher voltages. Hence it follows that the quality of the rays is different when the tube is operated at different voltages. When the current and voltage of the operation of a roentgen-ray tube are reproduced, both the quantity of radiation per second and its quality are also reproduced.

... of all waves receiving
Thus

produced

The intensity of the rays is reduced when they pass into or through various materials. The term "absorption" is used to denote such a reduction. One of the most striking characteristics of roentgen rays is their penetrating power, i.e., their relatively slight absorption by many substances highly opaque.

Absorption depends on the material through which the rays pass through a given material their intensity is reduced nearly in proportion to the physical density of the material, (2) if at the first surface of a layer of thickness, t , the intensity is Q_1 , and at the distal surface is Q_2 , then the quantity Q_1 minus Q_2 divided by Q_1 represents the percentage absorbed in the layer, (3) the next layer of like thickness will absorb the same fraction of what its proximal surface receives, and this will be true for each layer in succession. The higher the rate of absorption of the material for the wave length considered, the more the first layers absorb and the greater the difference between the absorption in the first millimeter and the absorption in any given millimeter below the first. The actual output of the tube always contains a great variety of wave lengths. Each wave length has its own rate of absorption, but the rate is always less for short than for long waves. It has been definitely ascertained that: (1) the total radiation from a tube operated at low voltage is less than from a tube operated at the same current at high voltage, (2) the energy from the low voltage tube is more easily absorbed, and (3) the absorption in the first layers is much greater at low voltage than at high.

thickness of the layer required to absorb a certain percentage, the amount of radiation applied to any tissue may be ascertained with a fair degree of accuracy.

The term "filter" has been applied to any material used between the tube and the patient's skin. The purpose of the filter is to remove a large part of the radiation that would otherwise be absorbed by the superficial layers of flesh. Filters are necessary and important for the treatment of non-superficial lesions, but in the judgment of the author are of little demonstrated value in the treatment of superficial lesions.

... s been used to
viz.:

Ross classifies cases of mesenteric thrombosis into those in which the process is the primary surgical condition, i.e., the condition the surgeon is called upon to diagnose and treat, and those in which the condition follows as a complication or secondary involvement some surgical condition already dealt with.

Elaborate classifications and tabulations of histories and groups of cases have failed to bring out a syndrome upon which even a probable diagnosis can be made safely in a fair percentage of instances. It is true that in some cases, especially those that are postoperative, slow in onset, and of the venous form of thrombosis, there are no symptoms which would even suggest the true condition interfering with the patient's recovery.

When a thrombosis occurs, the blood supply of a certain segment of intestine is stopped or diminished to a great degree. This is followed by a decrease of function manifested by lessened peristalsis. Unless the segment of bowel affected is very minute, the cessation of peristalsis within it soon causes stoppage due to local paralytic ileus, and the signs of intestinal obstruction develop. Further changes, gangrene, perforation, etc., are terminal stages only. So far we have not arrived at a point of diagnostic skill which makes it possible to differentiate with certainty the variety of an intestinal obstruction.

In five of the author's six cases pain was a prominent symptom. In the sixth case the mesenteric thrombosis followed a pelvic operation.

As a result of his study of these and other cases, Ross has arrived at the following conclusions:

1. Arterial mesenteric thrombosis is a lesion ~~giving a form of acute intestinal obstruction~~ which

of an acute intestinal obstruction which is slower in onset than the purely mechanical forms of acute obstructive ileus (adhesion, volvulus, etc.).

3. Venous mesenteric thrombosis gives rise to more vague symptoms and is slower in its course than arterial obstruction. It has also a more definite tendency to become cured spontaneously and to develop as a secondary or postoperative condition. When a collateral circulation is not established, however, the final symptoms are the same as those of arterial obstruction.

4. The treatment of mesenteric thrombosis is the treatment of any form of acute intestinal obstruction, i.e., early operation. The procedure employed must vary with the condition found. If the vitality of a segment of gut has been gravely affected, resection is indicated. If the patient's condition contra-indicates resection, the gut should be drawn out of the abdomen and fastened to the edges of the wound. A Paul's tube should then be introduced, resection being delayed.

In one case of the author's series a spontaneous cure resulted. While this may occur at times such isolated instances do not refute the general rule that an early radical procedure is indicated.

GEORGE W. HOCHREIN

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Perthes, G.: A Contribution to the Etiology of Osteochondritis Deformans, with Remarks on the Articles of Sundt and Waldenstroem (Beitrag zur Aetiologie der Osteochondritis Deformans, nebst Bemerkungen zu den Artikeln von Sundt und von Waldenstroem) *Zentralbl. f. Chir.*, 1920, XLVII, 542.

In discussing the findings in 28 cases of osteochondritis deformans Perthes states that he is not

was trauma sustained of such a degree that it could have been the cause of the condition, and in these instances it is possible that the disease was present before and was merely called to the patient's attention by the injury.

Sepp considers trauma the only etiologic factor but this theory is open to question also in cases in which the condition follows the reduction of a congenital dislocation of the hip. In such cases the disease is sometimes found in the hip which was not

dislocated or reduced. Tromme believes the condition to be the result of late rickets, but in the cases reported by

only 1 instar

Tromme's of

in other bones than the femur is important. Terkher observed 2 cases in which it was bilateral. In 1 case there was trauma and both hips were affected simultaneously. Brandes assumes that the condition may result from nutritional disturbances due to developmental disturbances. In this connection Perthes presents another case in which the osteochondritis followed mild rheumatic arthritis which was cured in the right hip and other joints but led to nutritional disturbances of the upper epiphysis of the left femur. The left hip had previously been found normal by X-ray examination. RATSCHKE (Z)

Dleffenbach, W. H.: Osteomalacia: Is It a Rare or Rather Common Disease? *Med. Rec.*, 1920, XLVII, 995.

During the past few years the author has seen an increasing number of cases of osteomalacia. The same increase was noted by Fromme in Goettingen and in Vienna and is probably the result of

the ordinary viscometer, is represented by the figures 28, 29, 31.5, and 50, respectively. A low viscosity is a very important property for a good pyelographic medium since the quantity of the medium which can be introduced into the kidney pelvis, other things being equal, varies inversely with the viscosity.

7 The osmotic pressure of an average concentrated urine, the molar sodium iodide, the 3 molar sodium bromide and the standard thorium solution is represented by the figures 2.7, 3.78, 13.47, and 5.52, respectively. From this it is evident that the iodide solution is the least hypertonic of the three mediums. In this respect it is far nearer the ideal than the bromide solution which has over three times as great an osmotic pressure, for it is well

patients who had more or less distress as a result of the pyelography and the number who suffered no additional discomfort whatever were equal. The discomfort was caused by over-distention of the kidney pelvis.

9. These recent experiments have modified previous conclusions in two respects: first, in the article published by the author in collaboration with Grandy sufficient emphasis was not placed on the fact that the sodium iodide solution was preferable to the potassium, for it has been shown that the potassium salt is somewhat irritating and, because of its toxicity when given intravenously, it does not afford so great a factor of safety in the event of its absorption in large amounts; second,

and the standard thorium solutions

10 The molar, or 13.5 per cent, sodium iodide solution now recommended is prepared by dissolving 15 gm. of the salt in a sufficient amount of water to make 100 ccm. In previous articles it has been shown that such a solution is neutral in reaction, mildly saline to the taste, non-irritating, and does not form precipitates with blood or urine.

11. Although the molar sodium iodide solution is not the least expensive of the pyelographic mediums, it nevertheless possesses certain distinct advantages which seem to make it the most suitable. Among these should be emphasized its freedom as far as can be determined, from toxic effects and irritation, the ease with which it can be prepared, the fact that it has the lowest viscosity and the lowest osmotic pressure of any mediums so far suggested colloids and emulsions alone excepted,

and the fact that it exhibits an opacity to roentgen rays which increases with increasing penetration of the rays, definitely surpassing in this respect the thorium and bromide solutions. ADOLPH HARTUNG.

Remer, J., and Witherbee, W. D.: The Cause of X-Ray Burns. *Med. Rec.*, 1920, xcvi, 183.

It was formerly believed that low voltages produced an immense number of rays of low penetration which were absorbed by the skin and hence were more apt to cause a roentgen-ray burn than the high voltages with rays of high penetration which are not absorbed by the skin. In order to test out this theory the experiments reported in the American Journal of Roentgenology for June, 1917, were made. These showed that when equal skin unit doses were given the results on the skin were identical even if

to be solely the quantity of roentgen rays reaching the skin for it is obvious that a high spark gap produces more rays that reach the skin than the same dose with a low spark gap.

Recently the authors made experiments with filtered and unfiltered rays, using 3 mm. of aluminum

ADOLPH HARTUNG.

Albray, R. A.: Some of the Essentials of Dental Radiography. *Dental Cosmos*, 1920, lvi, 835.

The author presents some of the important steps and procedures which are essential to obtain roentgenograms of good quality and to make reasonably accurate diagnoses from them. A good equipment and thorough familiarity with it are prime requisites. A wooden arm-chair with a specially constructed head-rest is preferable to the ordinary dental chair as the patient is less apt to

examination to determine the need for such an examination and what it is desired to show. It may be necessary to produce distortion to bring out the points wanted or to make exposures from different angles. The danger of burns from too long exposures

present. The joint is swollen. In the hands the disease attacks by preference the terminal interphalangeal joints—Heberden's nodes. It occurs frequently in the hip, spine, and knee and is considered uni-articular except in the spine and fingers. In spinal affections the pain may be felt in the back, around the trunk, or down the extremities—hence the complaint of neuritis, lumbago, or sciatica.

The first step in the treatment consists of the removal of foci of infection. The vast majority of such patients have alveolar infections. Dry heat, baths, electricity, massage, and Bier's treatment are all of value in relieving the pain. In several cases resection of the involved joint with the production of ankylosis is indicated.

The author draws the following conclusions:

1. The second great type of chronic arthritis has two distinguishing features: (1) bone production (lipping, spurring) at the joint line, and (2) absence of union between the ends of the bones.

2. The chief pathologic feature is the presence of areas of aseptic necrosis in the bone near the articular surface.

3. The primary cause is probably infection in the alveolar processes of the jaw.

4. Alveolar infection causes only this type of arthritis.

5. Tuberculosis, gonorrhoea, syphilis, etc. never cause this type of arthritis.

LOUIS HANDELMAN.

Roberts, P. W.: The Prevention and Treatment of Weak Foot in Children. *J. Am. M. Ass.*, 1920, lxxv, 237

In a previous paper the author demonstrated that rotation of the os calcis and its anteroposterior axis determines the degree of strain borne by the longitudinal arch, and that by directing the course of such rotation outward, foot strain may be prevented and weak foot overcome.

Three common factors in the etiology of weak foot are improperly designed shoes, unequal development of the leg muscles, and deviation of the normal mechanical relations between the tarsus and leg.

The most important single factor in preventing weak foot and developing the normal arch is the maintenance of the upright position of the os calcis during the period of growth. This may be done by simply thickening the inner border of the heel or by means of a plate which grasps the heel and holds it in the correct position without interfering with the front of the foot or the muscles and ligaments of the sole of the foot. The author emphasizes also the advantage of muscle training but states that such training can be given only when the child is old enough to co-operate.

In the prophylactic treatment, proper shoes, which are large enough at the ball of the foot to prevent crowding of the metatarsal bones and to

allow plenty of room for the toes to be completely straightened are essential. There are three normal types of feet: the straight foot, the in-flared foot, and the out-flared foot. The popular so-called orthopedic lasts with their inward swing are correct for only one type of foot.

The author calls attention to plates which he has designed to grasp the os calcis and hold it in the correct position.

CARL C. CHATTERTON.

FRACTURES AND DISLOCATIONS

Hertzka, E.: Fractures of the Ribs (Ueber Rippenfrakturen). *Wien med. Wchnschr.*, 1920, vii, 336

This article is based upon 576 cases of rib fractures observed at the surgical clinic of the University of Vienna during the past ten years. After a short introductory discussion of the location, course, and important anatomical relations of rib fractures the author reviews the etiology and symptoms briefly.

Hertzka has observed only fractures induced by direct or indirect force. The most common complication is hæmoptysis. Next in order are hæmothorax and skin emphysema. Skin emphysema is due usually to increased intrathoracic pressure with tearing of the pleura. More rarely it is the result of direct injury of the lung by a rib fragment, and when this is the cause the danger of hæmothorax and infection is much greater. In one of the author's cases the emphysema was not observed for several days after the injury.

In the presence of abdominal rigidity and general shock an injection of morphine is indicated early. This leads to relaxation if no other pathologic processes are present. In order to prevent pulmonary complications the patient should get up soon after adhesive plaster immobilization has been obtained. The same procedure is indicated also in uncomplicated cases of hæmothorax as it tends to shorten the duration of disability.

OSKAR MAYER (Z)

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Desfosses, P.: The End-Results of Resections of the Wrist (Les résultats éloignés des résections du poignet). *Presse méd.*, 1920, xxvii, 893

Farabeuf holds that the outcome of resections of the wrist has been very poor, especially in military surgery, but that the technical progress of the latter period of the war was an improvement over that of the first year.

In order to show the poor results obtained he describes a number of typical cases of resection of the wrist following traumatism by war projectiles. Excision of the entire carpus and of the lower extremity of the cuboid was done in the case of a wounded man whose left hand was hanging useless. Movements of flexion, extension, supination, and pronation were impossible. There was only a slight adduction and abduction of the thumb against the index finger, the other fingers were absolutely use-

ulceration in the site of the scar appearing a year or two following the treatment W L BROWN

LEGAL MEDICINE

The Construction of the Statute Making Hospital Records Admissible in Evidence. *Leonard vs Boston Elevated Ry Co (Mass)* 125 N E R, p 503

In Massachusetts, according to the decision in this case, only such portions of hospital records are admissible in evidence as relate to the treatment and the patient's medical history. "The difficulty in applying the act," the court stated, "arises from the nature of the entries made in hospital records. It frequently must happen that facts stated therein, which deal in the main with the patient's medical history, may also be relevant to the issue of liability in the event of litigation. For instance, a statement of the location and nature of the patient's injuries, primarily an essential element in the history and treatment of his case, may incidentally tend to confirm or disprove his claim as to how the accident happened. So the condition of intoxication in the case of a patient suffering from delirium tremens would be an important element of his medical history and treatment. In our opinion a reasonable and practical construction of the statute requires that a record which relates directly and mainly to the treatment and medical history of the patient should be admitted, even though incidentally the facts recorded may have some bearing on the question of liability." JOHN A CASTAGNINO

Hospital Records as Evidence. *Zipus vs United Rys (Md)* 103 Atl R, p 884

In this case an effort was made to introduce certain hospital records as evidence. The person who made the records was not presented and no one was able to tell by whom they were made, whether a student or a physician in the hospital. It was known only that they appeared among the records in the hospital, together with a large number of others. This evidence to support the hospital records was held to be too indefinite and not sufficiently accurate to warrant its acceptance. JOHN A CASTAGNINO.

Effect of Receiving Check "In Full of Account." *Bouth vs. Dougan (Mo)* 217 S W R, p 326

The plaintiff, a physician, and the defendant, his patient, had a dispute concerning the physician's bill. The physician rendered a bill which the patient refused to pay. An agreement was finally reached between them and pursuant to that agreement the physician agreed to a reduction. The patient then sent the physician a check marked "In full of account to date." The physician cashed the check but testified that he did not notice the words "check at the time he did so. The court held

that, in view of the dispute, the acceptance of a check so marked would prevent the physician from suing the patient for the unpaid balance.

JOHN A. CASTAGNINO.

Evidence of Causal Connection between Negligence and Injury. *Eichols vs Poe, Missouri Supreme Court*, 217 S W R, p 282

In this case the plaintiff was a blacksmith who had worked at his trade until the day before he was operated on and apparently was in reasonably good health. Two days after a nephrectomy he informed his physicians that he had a toothache. One of

as well as the dentist that his jaw was broken, and one of the physicians incised the inner side of the jaw. The patient himself removed parts of the bone and called them to the physicians' attention. The court held that under the circumstances the physicians were responsible to the patient for the injuries resulting from the removal of the tooth.

JOHN A CASTAGNINO.

Competent Medical Witness and Evidence of Insanity. *Beasley vs Faust (Texas)* 217 S W R, p 279

In this case it was held that a medical witness, not a specialist on mental diseases, but a physician who had treated many insane patients and had read text-books on insanity, was competent to testify as an expert that a person was insane at a time when he had not observed him, his opinion being based on observations of, and conversations with, this person before and after such time. The physician's admission that he was unable to state the type of the insanity, however, was seized upon as an indication that he was not sufficiently skilled in this disease to be an expert witness. The court held that the specialist in diseases of the mind may be able to classify all cases of insanity which come under his observation with reasonable accuracy, but it is not necessary that he should be a specialist in order to testify as a skilled witness. JOHN A CASTAGNINO.

Hospitals Liable for Negligence of Employees. *Mulliner vs Evangelischer Diakonissenverein (Minn)* 275 N W R, p. 699

A pneumonia patient suffering from delirium was left alone in a room on the second floor of a hospital. A few minutes later the window was found open and the patient was discovered laying dead on the ground below. The evidence disclosed the fact that the patient had been delirious for some hours and that nurses in attendance were aware of her condition. The hospital was provided with an insufficient number of attendants. The court held that a patient is entitled to such reasonable attention as his safety may require. If the patient is temporarily bereft

6. In double dislocations both hips should not be operated on at one time. At least eight weeks, and if necessary, a year, should elapse between the operations.

In the anterior route, the incision is made below the anterior superior spine and continued between the tensor fasciæ femoris and the rectus femoris. After the division of the tissues along the front of the iliac crest, the femoral head is exposed by a longitudinal incision of the capsule, the constricted portion of the capsule (which the author insists is always present) is incised, and the reduction is obtained by combined manipulation and the aid of a gouge chisel to act as a "shoehorn." The thigh is finally put up in plaster in position of full extension, with 25 degrees flexion of the knee, 60 degrees of abduction, and some internal rotation.

In the posterior route, the incision extends from the upper border of the trochanter down along the outer side of the femur. The upper part of the trochanter is denuded, and the capsule exposed. In cases demanding the use of the posterior route, excavation of the acetabulum and tenotomy of the adductors may be necessary. If the "shoehorn" instrument will not then effect the reduction, removal of the head and neck or even a portion of the upper extremity distal to the femoral neck may be necessary before the femur is implanted in the acetabulum.

Galloway analyzes the results of a total of 38 operations. In 12 cases a cure was obtained and in 14 the deformity was greatly improved, the lordosis being corrected and the stability of the hip greatly improved. In 1 case, however, the X-ray showed the head to be out of the socket, in several there was limitation of motion, and in a few, complete ankylosis. Eight especially difficult and unusual cases are reported. In 1 of these death resulted from streptococcal poisoning. In another, that of a girl 11 years of age, excision of the head, neck, and part of the trochanter was necessary to effect the reduction. In a fourth, a case of double dislocation, recurrence of the dislocation of the first hip necessitated a second operation. Another case, that of a patient 13 years of age, required arthrodesis of the hip. An excellent result was obtained after reduction. Motor paralysis was present in 1 case, and in another a primary tenotomy of the adductors was followed by heavy traction. In the last case mentioned, that of a woman 36 years of age, excision of the head, the neck, and a portion of the trochanter was necessary. ROBERT G. PACKARD

Borchgrevink, O.: Amputation of the Leg. *Ann Surg.*, 1920, lxxi, 697

To assure solidity of the artificial limb the leg should be amputated at least 22 cm. from the ground, or roughly, about the middle of the tibia. This can be done best by removing the fibula, making the scar so that it escapes pressure from the prosthesis. Ligation of vessels should be avoided as much as possible as it interferes with the nutrition

of the flaps. The tendon of the biceps and other soft parts should be separated as close to the fibula as possible without injury to the periosteum or the insertion of the muscle into the external tuberosity of the tibia. Every part of the stump should be covered carefully with fascia. The scar must not pass over the end of the tibia, but should be situated posteriorly, at least 3 cm. above the end of the stump.

Following such an amputation the weight is supported by the tuberosities of the tibia and its lower end as well. The peroneal nerve is exposed behind the head of the fibula and amputated high up so that it cannot be compressed by the artificial leg. In many cases this gives relief and is a strong

left below the level of the stump. The weight is fitted. It which at amount changes in a stump continue for one and one-half or two years after operation. The author cites 16 cases in which he believes the results were greatly improved by the removal of the upper end of the fibula.

The leg bucket must be made to fit accurately so that the weight will be evenly distributed. This can be done most readily by moulding the bucket of some plastic material and then hardening it in the form desired. GARTWOOD

Meehan, A. V.: War Amputations of the Lower Limb. *J. Med. J. Australia*, 1920, 1, 571.

In all amputations above the lower third of the leg an effort should be made to conserve every available inch of bone so as to provide the longest possible lever to carry the weight of the artificial limb.

In primary amputation for trauma, the guillotine operation meets all requirements. All devitalized tissue is removed, as much of the bone being conserved as possible. Early skin extension is advisable.

Early interference after primary amputation is a serious mistake. Re-amputation or plastic surgery should not be attempted before at least six months, and when complications are present the interval should be longer. The secondary operation on guillotine stumps consists in freely excising the scar *en masse* down to the end of the bone and undermining the plane of fascia sufficiently to allow closure. No muscle need be included in the flaps. If the skin edges cannot be approximated without undue tension, sufficient bone is removed to allow accurate approximation. Below the knee the fibula

is removed. Below the knee the fibula is removed. Below the knee the fibula is removed. Below the knee the fibula is removed.

Meehan prefers the amputation of Syme to that of Chopart because the latter often results in a

GYNECOLOGY

UTERUS

Stevens, T. G.: A Case of Sacculation of a Gravid Bicornate Uterus. *Proc. Roy. Soc. Med., Lond.* 1920, xiii, Sect. Obst. and Gynec., 154.

The patient was admitted to the hospital after 38 weeks without the pain of the powerful uterine contractions. A fluctuating swelling which depressed the posterior fornix filled the upper half of the pelvis, while the os uteri was completely out of reach in front of this mass. As the cervix was above the pubes and could not be reached at all, and as the patient was in great distress, it was determined to perform a cesarean section and then remove the mass in the pelvis.

The mass was found to be at the upper part of the uterus. A fluctuating swelling which depressed the posterior fornix filled the upper half of the pelvis, while the os uteri was completely out of reach in front of this mass. As the cervix was above the pubes and could not be reached at all, and as the patient was in great distress, it was determined to perform a cesarean section and then remove the mass in the pelvis. The mass was found to be at the upper part of the uterus. A fluctuating swelling which depressed the posterior fornix filled the upper half of the pelvis, while the os uteri was completely out of reach in front of this mass. As the cervix was above the pubes and could not be reached at all, and as the patient was in great distress, it was determined to perform a cesarean section and then remove the mass in the pelvis. The mass was found to be at the upper part of the uterus. A fluctuating swelling which depressed the posterior fornix filled the upper half of the pelvis, while the os uteri was completely out of reach in front of this mass. As the cervix was above the pubes and could not be reached at all, and as the patient was in great distress, it was determined to perform a cesarean section and then remove the mass in the pelvis.

up out of the pelvis was attached to the left side of the expanded uterus and proved to be the enlarged, thickened but not expanded half of a bicornate uterus, one-half of which was about twice as large as the other. The tubes and ovaries were quite normal and there were no other adhesions. The child was in a condition of white asphyxia but recovered after a hot bath and artificial respiration. The mother made an uninterrupted recovery.

CARL B. DAVIS.

Novak, E.: The Relation of Hyperplasia of the Endometrium To So-Called Functional Uterine Bleeding. *J. Am. M. Ass.*, 1920, lxxv, 292.

The author discusses the etiology of the hyperplasia of the endometrium and the causes of functional uterine bleeding. The following summary is given:

"1. Functional uterine bleeding occurring in the absence of any gross pelvic disease is very common at the menopause, when it often leads to the suspicion of malignancy. It is next most frequently observed at or near the time of puberty, but it may occur at any age. The bleeding is commonly of the type menorrhagia, with not infrequently periods of amenorrhoea.

"2. A frequent histologic finding in these cases is the condition that has been called hyperplasia of the

endometrium. This is characterized by an overgrowth of both the epithelial and stromal elements.

endocrine disturbance of the ovary. The exact nature of this functional disorder and the precise histologic changes in the ovary which are associated with it have not as yet been satisfactorily determined.

"4. The secondary nature of hyperplasia of the endometrium explains the failure of curettage to bring about permanent cessation of the menorrhagia observed in these cases. This procedure merely attacks a local manifestation of the underlying cause—an endocrine disturbance involving the ovary."

CARL B. DAVIS.

Frank, L.: Carcinoma in the Cervical Stump after Supravaginal Hysterectomy; and the Radium Treatment of Carcinoma of the Cervix. *Am. J. Surg.*, 1920, xxxiv, 149.

The author has reviewed the literature to date and collected 47 cases of cancer occurring in the cervical stump after supravaginal hysterectomy, 43 of carcinoma and 4 of sarcoma. He reports also 4 additional cases of carcinoma. In about 40 per cent of the carcinoma cases the interval between the hysterectomy and the diagnosis was so short that it appears probable that the carcinoma was present at the time of the original operation.

The author treated 3 cases with radium and reports an apparent cure at the end of one year in 2 of them. In addition to these results he reports those obtained by radium treatment in 38 cases of carcinoma of the cervix. Eight of the latter would probably have been classed as operable; 30 were clearly inoperable. Of the 38 patients, 6 could not be traced, 11 have died, 4 are not well but are without local evidence of the disease, and 18 are entirely well.

The literature of the radium treatment of carcinoma of the cervix is reviewed. S. A. CHALFANT.

Hansen, I.: The Treatment of Carcinoma of the Uterus with Radium in Stockholm (Radiumbehandling des Gebärmutterkrebes in Stockholm). *Ugeskr. f. Læger*, 1920, lxxvii, 357.

The systematic use of radium in the treatment of carcinoma in gynecological cases dates from 1910. This treatment was initiated and developed by Forsell. In Sweden radiotherapy is practically a monopoly, being given exclusively in the Radium Insti-

great toe is shortened and the extensor tendon relaxed. One quarter inch of the articulating surface of the head of the first metatarsal bone is removed and motion is maintained by turning the bunion bursa over the end of the divided bone and into the joint after the bony overgrowth has been removed. In cases of flat-foot with hallus valgus and bunion the head of the metatarsal bone and the bunion bursa should be preserved and the overgrowth of bone and the sesamoids removed. B. R. PARKER.

ORTHOPEDICS IN GENERAL

Cooper, G.: The Treatment of Muscular Atrophy by Artificial Stimulation. *J. Roy. Army Med. Corps*, London, 1920, xxv, 37.

Muscular injuries are classified according to their etiology as: (1) those due to direct trauma or the action of toxins on the muscle fibers, and (2) those due to the suspension of the function in the muscle.

Trauma may cause loss of muscle substance with replacement by fibrous tissue or injury to the nerve supply. Such loss generally results in a fibrous contracture or a loss of contractile power.

There are three types of atrophied muscles

1. Those due to a lesion of the lower motor neurone, the result largely of injuries of peripheral nerves

2. Those due to immobilization of neighboring joints by splints.

3. Those in which contraction is inhibited by pain in the joints which they control, as in wasting of the quadriceps in arthritis of the knee.

The author outlines the physiology of muscle. Muscle fibers contract, either to nerve impulse or direct stimulation. During contraction lactic acid is formed. During relaxation there is oxidation of carbohydrates; oxygen is consumed and CO₂ is produced. The carbohydrates are undoubtedly drawn from the lymph through the limiting membrane of the muscle fibrils, and the exchange must take place during contraction and relaxation. In the treatment, therefore, an attempt must be made to cause rhythmical muscular contraction.

The treatment of muscle by active contraction is not considered in this paper. Especial reference is made to muscles the condition of which is such that their response to active contraction is too feeble and ineffective to bring about a sufficient interchange between the elements mentioned and the surrounding bloodstream. The methods used most commonly for artificial stimulation are massage and electricity.

The response of a muscle with interrupted nerve supply to manipulation is very feeble, and the effect of such manipulation is due to mechanical stimulation of the vasomotor system. When the nerve supply is intact, however, the contractions are largely the result of stimulation of the muscle fiber through the muscle plate.

For electrical stimulation the faradic or interrupted galvanic current is used. Stimulation takes

place only at the make and break of the current. A constant current is incapable of producing contractions in muscles. Degenerating muscles will not react to currents of brief duration set up in the ordinary induction coil or faradic battery.

To produce contraction in muscles by electrical stimulation the current must have a minimum intensity and this minimum current must be continued for a definite time. This period of time varies according to the velocity of excitability of the muscle. In normal muscles it is about one thousandth of a second, while in paralyzed muscles it may reach fifty thousandths of a second.

The selection of a proper current is governed by two considerations. (1) the degree of the contractions, and (2) the degree of pain caused by the current.

The normal rate of stimulation is much greater than has been supposed. Heretofore the normal rate has been considered only about forty per second.

Sensation is influenced by the length and uniformity of the waves and interruptions. With long waves there is pain.

With Dean, the author has produced a coil which causes less pain and is more effective than the Wilson faradic coil. The Frimandeu coil for interrupted galvanic currents is the type most commonly employed for the stimulation of muscles.

The author has proved that artificial stimulation will bring about an improvement in the size and tone of a muscle group even when there is complete interruption of the nerve supply.

DANIEL H. LEVINTHAL.

Ducroquet, C.: Infantile Hemiplegia; A Functional and Therapeutic Study (*Hémiplégie infantile étude fonctionnelle, thérapeutique*). *Presse méd.*, 1920, xxviii, 504.

The lesions characteristic of infantile hemiplegia appear to originate in the joints. The tibiotarsal joint alone may be involved, but if the knee is affected the ankle joint is abnormal. When the center which controls the hip is altered both the other centers are also markedly involved. The lesions proceed from the distal to the proximal end of the extremity.

In examining patients with hemiplegia it is necessary to know the intensity of contraction of the diseased muscles. This is a variable quantity and diminishes from the tip to the base. The amount of active function of the muscles reveals the extent of voluntary movement which the subject is capable of exerting.

In infantile paralysis a muscle does not respond if it is paralyzed, but if the paralysis is incomplete it executes the movement without force in the same length of time required by a normal muscle to perform it with force, and with the same amplitude as the normal muscle.

In hemiplegia there is a characteristic slowness of response due to the resistance of opposite sets of

was felt which was not displaced by changes in the patient's position, and was seemingly attached to the posterior abdominal wall. Between this tumor and the costal margins was a tympanic zone about 5 cm wide. Pelvic examination showed the cervix

Occa-
The
but
without adhesions. The left ovary was palpable but the right could not be felt. Deep palpation was not painful.

Curettage was performed and resulted in the suppression of the hemorrhage. Ten days later a laparotomy was done, the cyst being punctured and extirpated. The right ovary, which was adherent, was also removed. The raw surfaces were peritonized and the abdomen closed in the usual way.

For several days following the operation the temperature was irregular until tenderness developed and a fluctuating mass appeared in the pouch of Douglas. A posterior colpotomy was then performed and a drain inserted. Large quantities of foul pus were evacuated. The patient then made a complete recovery.

From a study of the literature and from their own experience the authors have come to the conclusion that the parovarium resembles a cyst, the height of

part of the wolffian body but its exact function is not known.

near the tubal ostium is most common and when it becomes pedunculated, as in the case described, it has the appearance of a cyst of Morgagni.

WILLIAM R. MEEKER

Chalier, A., and Dunet, C.: Essential Tubo-Ovarian Varicocele (*Le varicocele tubo-ovarien essentiel*). *Gynec. et Obst.*, 1920, 1, 239.

Tubo-ovarian varicocele is a relatively rare condition. Disturbances of the venous circulation, peri-uterine phlebitis, postpuerperal thrombosis, etc. are found frequently during pelvic operations, but in such cases the pelvic varicocele is secondary to a uterine, adnexal, or more rarely, a rectosigmoid lesion. The varicocele to which the authors refer is a primary uterine varicocele which is unrelated to any pelvic lesion whatever. This condition was first described by Richet in 1860, and in 1909 Camuset was able to find only 7 authentic cases reported in the literature.

The authors report the case of a young woman 20 years of age. On laparotomy the uterus and

right appendages were found to be normal but on the left side was an enormous development of the utero-ovarian veins forming a vascular tumor. The veins were greatly dilated but still intact. The left ovary was small and sclerocystic. The left tube and ovary were ligated and resected. The veins were as large as the internal saphenous vein. The varicose dilations occupied the mesosalpinx. The ovary showed extensive cystic degeneration of the graafian follicles. The lesions were characterized by sclerocystic ovaritis of dystrophic and non-inflammatory origin with marked follicular atresia and hyperplasia of the lutein cells (false corpora lutea).

In the cases described in the literature the diagnosis of a laparo however the only
sistent, pasty pelvic tumor which is only slightly painful on pressure. This tumor increases in volume when the patient assumes the erect position and diminishes in volume or disappears when she lies down. The immediate change in volume occurring when the position is changed alone indicates the presence of a vascular tumor.

The authors do not regard as satisfactory any of the explanations proposed as to the origin of tubo-ovarian varicocele. They believe that the ovary plays an important part in the pathogenesis and the internal secretion of the ovary is the most important factor in the vascularization of the entire genital tract. In tubo-ovarian varicocele there are sclerocystic ovarian lesions characterized by follicular atresia. In such an ovary the number of cells of internal secretion is increased and hyperfunction results. Menstrual congestion is prolonged and intensified, and the congestive disturbance will naturally be reflected in the genital vascular system. The ovarian hormone, therefore, exerts a specific action on the vessels and the vasomotor nervous system associated with the genital vascular system.

The only rational treatment is unilateral salpingo-oophorectomy. This allows the removal of the varicose area with the removal of the tube, the
reference
Jayle

Bonbarn-Wetchaghl, L., and Ellis, A. G.: Cystadenomyoma of the Fallopian Tube. *Surg., Gynec. & Obst.*, 1920, xxvi, 77.

The author reports a case of cystadenomyoma of the fallopian tube in a Siamese woman 23 years of age. The symptoms began, when the patient was 17 years of age, with pain in the left side of the pelvis for two days before each menstrual period and also during the period, ceasing when menstruation ceased. This continued until three months after marriage at the age of 21, when pregnancy began. During pregnancy and for seven months after the

exerts an indirect influence on the muscle through the motor roots of the spinal cord. Both views have this in common: they admit that injuries to the sympathetic influence voluntary movements.

MAX WEICHERT (Z).

Nové-Josserand, G., and Rendu, A.: Sacralization of the Fifth Lumbar Vertebra and Its Complications (La sacralisation de la 5^e lombaire et les accidents qui en résultent) *Presse méd.*, Par., 1920, xxviii, 514.

The authors review the history and pathologic anatomy of sacralization of the fifth lumbar vertebra. They observed 5 cases at Lyons and found the anomaly also in 14 other cases in which a radiograph of the pelvis was made for suspected renal calculi. The authors believe that morphological variations of the fifth lumbar vertebra are rather frequent and will be found in many painful conditions of the sacral and lumbar regions.

In the 19 cases observed by the authors there was symmetrical and bilateral sacralization in 6, asymmetrical bilateral sacralization in 8, and unilateral sacralization in 5. In 12 of these cases there was actual contact or articulation of the apophyses with the pelvic bones. In the authors' opinion there is a certain relationship between attenuated forms of spina bifida and sacralization of the fifth lumbar vertebra.

The authors believe that Italian surgeons have somewhat exaggerated the part played by the nervous system in this condition. Compression of the fifth lumbar nerve has not been established definitely as the location of the pains is not exactly that of the distribution of the nerve. In 3 of the authors' cases in which a most careful examination was made there was no evidence of radiculitis.

The authors' theory regarding the pathogenesis of the condition is as follows:

As is well known, the spinal cord in its development ascends in relation to the spinal column. Its terminal cone, which in the infant descends as far as the third lumbar vertebra, is found in the adult between the first and the second lumbar vertebrae. It would not be impossible, therefore, for sacralization of the fifth lumbar vertebra to be associated with a certain amount of disturbance in the reciprocal relations of the spine and cord which would compress the nerve roots even if there were no hypertrophy of the transverse apophysis. This hypothesis is favored by the relatively frequent association of fifth lumbar sacralization with spina bifida.

In the differential diagnosis between sacralization of the fifth lumbar vertebra and Pott's disease of the lumbar region the following facts should be borne in mind:

1. The resemblance of the symptoms of sacralization to those of other affections becomes more vague as the examination proceeds.

2. The mode of appearance and the evolution of the symptoms of sacralization are often very characteristic.

3. In sacralization the situation of the pains is the same as that of the sacralized vertebra.

4. The demonstration of an osseous contact in multiple radiographs favors the diagnosis of sacralization.

With regard to the treatment the authors state that the results of radical intervention are neither sufficiently clear nor definite to warrant operation as a routine procedure. Surgical treatment is indicated, however, in severe cases in which there is progressive neuritis.

WILLIAM A. BRENNAN.

Vanderhoof, D.: Spondylitis and Abdominal Pain, with a Discussion of Nerve-Root Symptoms Simulating Visceral Disease. *J. Am. M. Ass.*, 1920, lxxiv, 1689.

Hypertrophic spondylitis has been diagnosed more frequently since the discovery of the roentgen rays. Until recently very few cases were reported in the literature. At present the orthopedist regards spondylitis as a rather common affliction.

In a series of 87 cases of spondylitis seen by the author there was abdominal pain in 40. In 17 of these visceral disease was demonstrated and the rôle played by the spondylitis was questionable or negligible. In 23 cases careful studies excluded visceral disease as the cause of the complaints.

The pain in spondylitis varies according to the extent and location of the inflammatory process. Arthritis is frequently associated with hypertrophy of bone, atrophy of cartilage, and calcification of ligaments which cause pain and muscle spasm in the back, limit the movement of the spine, and cause gradually developing rigidity. If the rib articulations are involved there is pain on breathing or complete absence of thoracic breathing.

Pressure on the nerve roots or inflammation by extension gives rise to sensory disturbance characterized by pain in the distribution of the nerves. This pain may vary from a dull aching or drawing sensation to the most agonizing paroxysms.

The thoracic, abdominal, brachial, and sciatic pains of spondylitis may occur on one or both sides of the body. When bilateral, they are usually more severe on one side.

Referred pains are usually increased by movements of the body and relieved by rest in the recumbent position. Sometimes pain occurs during sleep and in such cases is probably due to muscular relaxation.

Referred pains of spondylitis have been confused

to tabetic crises.

Vanderhoof abstracts 6 illustrative cases of referred pain in spondylitis showing that despite a very complete examination spondylitis may be overlooked when the nerve roots are involved.

Of the series of 87 cases reviewed, 60 were those of males and 27 those of females. Most of the patients were over 40 years of age.

D. H. LEVINTHAL.

Hammond, F. C.: The Relation of Appendicitis to Intrapelvic Disease in Women. *N. York M. J.*, 1920, lxi, 978

Appendicitis in the female may be mistaken for pyosalpinx, ovarian abscess, suppurating ovarian cyst, torsion of the pedicle of an ovarian cyst, ectopic

turbances or previous attacks of pain on the right side. The acute pain is at first general and colicky and later becomes localized. In pyosalpinx the pain is more constant and less severe and is situated lower

respect we have for it. Those who have not had a

2. The history should be taken carefully in the case of every patient.

3. The right chest should be carefully studied

4. A bimanual or recto-abdominal examination should be part of the physical examination of every female patient beyond the age of puberty

5. If at the time of operation an incision is made for the exposure of the appendix without respect to the physical condition of the appendix, the surgeon's finger should be passed into the right pelvis to palpate the right adnexa.

S. A. CHALFANT.

DeRom: Plastic Surgery of the Perineum (Ueber Perineoplastik). *Vlaamsche geneesk. Tijdschr.*, 1920, i, 169.

The treatment of prolapse of the vagina and uterus with pessaries is being abandoned because of the resulting inflammation. The method of choice today is perineorrhaphy. This consists in the formation of a pelvic floor by means of silver wire which is drawn about the pubic bone and the upper or lower ramus and tightened with a clamp. From experiments on the cadaver and from anatomical plates it is clear that in this operation there is no danger of injuring important vessels. Tying off of the pubic vessels and nerves by the wire about the bone may be avoided by tying the wire loosely.

This operation was performed on 4 women with successful results in 3 cases. In 1 instance the condition recurred after a time as the wire broke. Because of the limited flexibility of wire the author recommends the use of silk or silk thread instead.

SCHMUTZ (Z).

Huber, G. C., and Lewis, D.: *Amputation Neuromata: Their Development and Prevention.* *Arch Surg*, 1920, 1, 85

Huber and Lewis report a series of experiments made on rabbits to determine the factors which cause, and the means of preventing, neuroma formation. Their conclusions are as follows:

"1. A neuroma indicates an attempt, which is thwarted or blocked by scar tissue, on the part of the neuraxes of a divided nerve to seek the distal segment and thus complete nerve repair.

"2. When blocked, the regenerating neuraxes form spirals and end disks and become irregularly dispersed throughout the connective tissue of the bulb

"3. The regenerating neuraxes react on the connective tissue elements of the bulb, which as a consequence increase in number and maintain their embryonal characteristics longer than is normally the case.

"4. The 'swing door' or reversed V operation and the crush and tie operation do not prevent neuroma formation.

"5. Any method to be successful must be directed against the neuraxes.

"6. Absolute alcohol injected into the nerve some distance (from $\frac{3}{4}$ to 1 in.) above the plane of section is more successful in preventing neuroma formation than any of the other methods ordinarily employed."

HENRY J. VANDEN BERG.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Thompson, J. E.: *Surgery and Embryology.* *Surg., Gynec. & Obst.*, 1920, xxvi, 18

In this article a few surgically important abnormalities are considered. Some of these deviations from the normal may be better understood when a comparative study of the human body and the lower vertebrates is made. The dissecting room shows that the most common anomalies occur in the arteries. Next in frequency are intestinal abnormalities which are due for the most part to the arrest or failure of the colon to rotate. The author outlines the development of the small and large intestines minutely.

Cysts of the neck of branchial origin may be classified as follows

1. Lymphatic cysts. These are derived from the lymphatic sinus in the third month of foetal life and are situated in the lowest part of the posterior triangle of the neck.

2. Thyroglossal cysts. These occur in the midline above or below the hyoid bone and are derived from the thyroglossal duct.

3. Thyroid gland cysts. These are found in the lateral lobes of the thyroid gland and result from cystic degeneration of adenomata.

4. Sequestration cysts. These occur in the midline and are due to inclusion of the epiblast during the fusion of the ventral folds of the embryo.

5. Branchiogenic cysts. These are remains of the external branchial depressions of the embryo.

A detailed review of the development of the branchial arches and clefts is given, and cases illustrating some of these cysts are reported.

The author believes that ranula, submaxillary cysts, and deep cervical cysts are derived from vestigial remains of the branchial clefts and that their subsequent position depends upon the shifting of muscles during the formation of the neck.

ISADORE E. BISHKOW

Braun: *The Results of Friedmann's Treatment in 80 Cases of Surgical Tuberculosis (Die Ergebnisse der Friedmannschen Behandlung von 80 Fällen von chirurgischer Tuberkulose)* *Deutsche med. Wchenschr.*, 1920, xlii, 596.

The cases of surgical tuberculosis reported were of different types and the patients of different ages. Seven of the 80 cases are disregarded in the discussion of the end-results as 2 of the patients died shortly after the treatment was begun and 7 died before the treatment had been given for a sufficiently long time to cause improvement. Sixteen of the patients were either benefited or cured, but the improvement could not be attributed solely to the Friedmann treatment as surgical therapy was also given and the casts and extension might have proved effective without the serum.

In 29 cases the condition remained unchanged or became worse. In 20 cases, however, the favorable effect of the Friedmann serum was clearly evident and in some instances was noted after a few days. In 8 cases the treatment exerted a distinctly unfavorable effect, causing an acute exacerbation of the tuberculous process. This may have been due, however, to improper dosage, especially excessive dosage. The correct dosage must be determined from experience. Friedmann's directions cannot be followed exactly in practice.

ADLER (Z)

Deve, F.: *Alveolar Echinococcosis in Man and Bovine Multilocular Echinococcosis (Échinococcosse alvéolaire humaine et échinococcosse multiloculaire bovine).* *Anal. Fac. de Med. Univ. de Montevideo*, 1920, v, 129.

It is generally believed that the bovine multilocular echinococcosis and human alveolar echinococcosis are identical.

In an article based on the macroscopic, histologic, and zoologic characters of the two lesions published in 1905, Deve maintained that the two affections are not identical. This conclusion has been recently challenged by Liambias. On the basis of a study of

While further pregnancies need not be forbidden, the risk must not be considered lightly, and if pregnancy does occur the patient should be under the constant supervision of a competent internist.

EDWARD L. CORNELL

Landis, D. and Edwards, A. M.: Suppression of serum; of the

The author reports 12 cases in which suppression of urine occurred as a complication of pregnancy or the puerperium. Eleven of the cases are described in detail.

Pathologic reports of the condition of the kidney were available in 8 cases. Symmetrical necrosis of the renal cortex was found in 6 instances, in 3 of these there was evidence of pre-existing chronic inflammatory changes, while in 3 others the condition was proved to be pure cortical necrosis. The remaining 2 of the 8 cases showed chronic interstitial nephritis only. The suppression of urine, therefore, may be due to one or both of these causes. It is impossible to determine clinically which of these conditions is present.

Focal necrosis was found in organs other than the kidney in 5 of the 6 proved cases. Renal cortical

1½, and 2 ccm injected at intervals of one week into the extensor surface of the arm.

animal.

The vaccination of women was carried out in a maternity clinic during the last six weeks of pregnancy. About four injections were given. The results may be summarized as follows:

1. The injections did not appear to have any harmful effects on the fetus *in utero*.

2. Pregnant women reacted to the vaccine in the same way as non-pregnant women and the normal blood changes of pregnancy were not altered by the vaccine.

blood serum when both were determined simultaneously. The mammary epithelium appeared to delay the passage of the agglutinins but was not an absolute barrier.

4. A study of the fetal sera showed that as a

being passively immunized, but there is reason to believe that in some cases there is active immunization of the fetus.

WILLIAM A. BRENNAN

Torre y Blanco, J.: The Classical Cesarean Section in the Treatment of Certain Forms of Bronchopneumonia in Pregnancy (La cesarea clasica como tratamiento de algunas formas de broncho-neumonia durante el embarazo). Siglo med., 1920 lxvii, 204.

The results of the

hence the majority of such cases terminated fatally when the gestation was further along than six months.

Therapeutic

insufficiency. In these cases, especially when the infection is severe, premature labor and abortion occur, the fetus usually being born dead or dying within a few hours after birth. As a general rule such cases terminate fatally in spite of the employment of cardiac tonics, stimulants, and polyvalent vaccines.

stance

On an called action

contributory cause, was found in three kidneys. It is evident that the primary cause is a toxin peculiar to eclamptic conditions, since in fatal cases of clampsia focal necrosis in some organ is an almost constant finding.

Decapsulation and nephrotomy are unsatisfactory as all means of treatment.

and some cases were obtained by elimination and counteraction of the toxins before vascular changes and necrosis of the tissues have occurred.

G. S. FOULDS

Guerin-Valmale and Vayssière, H.: The Effects of Antityphoid Vaccination on Pregnant Women (Sur les effets de quelques vaccinations antityphoidiques chez des femmes enceintes). Gynec et obst., 1920, 217.

Since 1913 the authors, following previous work of other investigators, have employed antityphoid vaccine experimentally in animals and clinically in the cases of pregnant women. The vaccine used was a monovalent vaccine containing 500,000,000 bacilli per cubic centimeter. The dosage given was ½,

The author concludes that in most cases a surgical operation seems to be of no value as regards the hypochondriasis and therefore is indicated only by an evident and serious operable physical lesion. In cases of peripheral lesions which do not threaten the general condition or cause grave local disturbances the surgeon should carefully weigh the risks of the operation and its probable results before deciding to perform it. In many cases an operation or the mere anticipation of an operation has caused psychic trauma and serious mental disturbance.

WILLIAM A. BRENNAN.

BLOOD

Ives, R. F.: *Functional Blood Pressure. Am. J. M. Sc.*, 1920, clx, 61.

Ives divides the subject into two parts, consider-

influenced by the time of day, the mental attitude, the type of diet, or emotion. However, anything that disturbs the physiological harmony of the circulatory system will naturally influence the mechanical agencies of its flow and cause a change in tension. When the recorded pressure is classed as a symptom rather than as a disease it is of great diagnostic value and aids in differentiating between organic and functional lesions.

The chief etiological factors of hypertension are mentioned and the main factor, metabolism, and its resultant feature, auto-intoxication, are discussed in detail. The views of several authors are quoted.

Mention is made also of the climacteric hypertension, a type of high blood pressure frequently found in women at the menopause. In these cases hypertension develops during or subsequent to ovulation and ovarian glandular secretion, processes with which it is apparently closely associated.

The significance of functional high blood pressure in obstetrics, particularly in connection with the probable occurrence of the eclamptic state, is pointed out. Ives believes that a pressure of over 150 mm. Hg. in patients whose original normal pressure is about 120 is dangerous and that in such cases the patient should be carefully watched and appropriate eliminative measures should be instituted. If the pressure continues to rise, the induction of premature labor should be considered.

In discussing hypertension in cerebral hemorrhage Ives states that in apoplexy the cerebral hemorrhage causes a more marked functional rise

In considering functional hypotensive blood pressure it is essential to remember that a low arterial pressure is abnormal. The author believes, furthermore, that a hypotensive pressure must be considered functionally pathologic when it is joined with signs and symptoms of impaired health.

Cases of hypotensive pressure may be divided into the following groups:

1. Hypotension due to tuberculosis.
2. Hypotension due to endocrine deficiency: (1) toxic, and (2) pituitary.
3. Hypotension due to infections.
4. Hypotension due to shock, hemorrhage, vomiting, and diarrhoea.

In tuberculosis the low readings are due to the fact that the vitality of the whole organism is affected. In the author's opinion it is well to suspect the presence of tuberculosis, active or latent, in young men and young women between the ages of 16 and 26 who show wasting and anemia associated with hypotension.

In certain cases it has been demonstrated that glandular substances influence low blood pressure. Great effort should be made, therefore, to determine in what class of cases glandular therapy is effective.

Another factor causing a decrease in the blood pressure is the profound depression which occurs in diseases such as influenza, pneumonia, diphtheria, and typhoid fever.

A. R. HOLLENDER.

Furness, W. H., and Lee, W. E.: *Blood Transfusion. Pennsylvania M. J.*, 1920, xxiii, 577.

The essential difficulty in blood transfusion is the element of coagulation. In 1914 the use of sodium citrate was suggested to overcome this danger and it was found that a 0.2 per cent solution would preserve blood for hours and was so slightly toxic to the human tissues that it could be used with impunity. Later it was claimed that whole blood gave more satisfactory results than citrated blood but this question is still unsettled.

Citrated blood gives a febrile reaction in 60 per cent of cases. Moreover, Drinker and Brittingham claim that it cannot prevent the changes in the platelets which initiate coagulation and that it induces slight abnormality in the blood cells as evidenced by increased fragility and a tendency toward hemolysis. In blood disease, therefore, whole blood is preferable. When in cases of hemorrhage large quantities of blood are needed, however, the citrate method will usually be found more satisfactory.

The authors are experimenting with a simple method for the indirect transfusion of whole blood into the recipient's system. By this method of introducing large quantities of citrate into the veins of the recipient.

Transfusion is the optimum procedure in hemorrhage as it is a biological process. The donor's blood cells have been demonstrated in the recipient's blood thirty days after transfusion.

Hypertension is usually associated with cerebral growths, the rising pressure being evidenced functionally by headache and vomiting. When the growth is removed, the tension is lowered.

LABOR AND ITS COMPLICATIONS

De Lee, J. B.: The Treatment of Obstinate Occipito-posterior Positions. *J. Am. M. Ass.*, 1920, lxxv, 145

In practice, there are two classes of cases: first, those in which the head is engaged, and second, those in which the head is in or above the inlet.

be used in the first stage to prevent exhaustion of the mother and child, but it is not wise to let labor drag on too long

By means of a colpoxynter the dilatation of the

placing the patient on her side to prevent prolapse of the cord. If the head does not engage very soon, two courses of procedure are open. version, followed by extraction if necessary, and manual correction of the position. In the cases of multiparæ the obstetrician's preference may be exercised

at the cervix is fully dilated and the

which the occiput points should give results. If they do not or if rectal examination shows that the occiput has rotated to the sacrum the patient should be etherized and the head rotated to the proper position by combined internal and external manipulation. As a rule, contrary to what is usually taught, this is not difficult; the chief difficulty has been the holding the head in its new position sufficiently long to apply the forceps. As soon as the fingers are off the head, it rotates back again to its former position. This can be prevented by the simplest means. After rotation has been

De Lee has performed this operation often and always successfully. He therefore recommends it for general practice. When done carefully and gently it is not harmful. After delivery the small wounds are touched with tincture of iodine. Even when the head has not been engaged De Lee has succeeded in rotating and holding it in position with a vulsellum, but states that it is best first to effect the rotation by hand.

EDWARD L. CORNELL.

DeL.

The author expresses the opinion that labor is no longer a normal function and mentions several factors which render it pathogenic.

For the mother there is always the danger of infection even under the most ideal conditions. Virulent streptococci are present in the vagina in a large number of cases, and if the second stage becomes too prolonged and the woman's resistance is lowered they may prove fatal. Exhaustion and rupture of the uterus are other possible dangers. In a very complete summary the author shows also how injuries to the pelvic floor and perineum are related to many of the complications of pregnancy.

The dangers of the second stage of labor to the child are much greater than is generally believed. The most common dangers are asphyxia from

outlet tissues and the prevention of injury to the child. When the pelvic floor is rigid DeLee shortens the second stage artificially with the "prophylactic forceps." When the head has reached the pelvic floor and the levator ani muscles have begun to

If the pains lag, however, two or three drops of pituitrin are given. If the pains are not strong, or if the head reaches the pelvic floor after a second stage lasting longer than from forty-five to sixty minutes, or if the rotation is not complete within this time, the use of the prophylactic forceps is indicated. Under complete ether anesthesia the pelvic floor is incised and the head rotated anteriorly. Just after the head is brought through the vulva 1 ccm. of pituitrin is given hypodermically. In a few minutes the uterus contracts and expels the placenta into the upper vagina. From the upper

operated upon do not influence the blood supply of the injured limb or the character of the pulse curve. Aneurisms of large vessels, however, result in increased blood pressure and consequent compensatory activity of the heart and larger vessels. The ligation of the artery and vein causes a decided disturbance of the circulation in the injured extremity, the severity of which depends upon the location of the ligated vessels. The more peripheral the ligation, the less severe the damage and the more readily a collateral circulation is established.

In 60 per cent of such operations the pulse is not palpable, the blood pressure falls to a minimum in the affected limb (to as much as 90 mm. Hg. less than on the normal side), and the pulse is either not palpable at all or very feeble. The pulse curve has a typical appearance—a slow rise during systole, then a plateau, and then a slow decline during diastole without diastolic elevation.

In the other 40 per cent of the cases the pulse is palpable but the blood pressure remains about 15 mm. Hg. lower. The destruction of large vessels also influences the blood pressure and causes increased activity of the heart and large vessels.

In 1 case an artery was sutured with good results. The blood pressure fell only about 20 mm. Hg. and the pulse wave was only one-fourth less in height than the wave on the sound side.

KINDL (Z).

SURGICAL DIAGNOSIS, PATHOLOGY, AND THERAPEUTICS

Mellon, R. R.: Life Cycles of the Bacteria and Their Possible Relation to Pathology. *Am. J. M. Sc.*, 1920, cli, 874.

The author reviews the more significant studies made of this subject and suggests their possible bearing on some of the unsolved problems of present-day pathology and bacteriology.

Hort showed that in meningitis the cerebrospinal fluid contains a filterable virus which in the fresh state will initiate a continuous fever in monkeys if it does not cause death. Inoculation of this filtrate will then yield the meningococcus in addition to other forms of bacteria encountered in meningitis. These results according to the author, suggest that the virus and the meningococcus are phases in the life cycle of one organism. He has shown that certain members of the colon-typhoid group can pass on themselves in other ways

from an organized to an amorphous stage. From this stage "regenerative units" develop. These, increasing in size, become "regenerative bodies" which later develop into cells of normal shape. The tubercle bacillus, first, the second, the non-acid-fast Cram-positive granules of Much;

and third, the tubercle bacillus. Mellon studied the so-called Hodgkin's bacillus and related diphtheroid strains and found in them remarkable morphological and biological changes. In some he discovered long filamentous forms and in others a single large giant coccus. In a case of streptothricosis a filterable form found in the blood on cultivation grew as a diplococcus and later changed to the filamentous or branching form. These separate entities Mellon regards as stages in the life history of a single organism. Browne has recently described a chromogenic spirillum that under altered conditions lived and reproduced itself as a coccoid.

The striking remissions of pernicious anemia, the Pel-Ebstein febrile syndrome in Hodgkin's disease, and other similar changes might well be correlated with alternate "resting stages" and stages of activity in the life history of the organisms involved.

If it is true that there are stages of bacterial life the term "secondary invader" must be reevaluated as the organism to which it is applied may be merely the primary bacterium in a different stage of its life history.

M. H. KAHN

EXPERIMENTAL SURGERY AND SURGICAL ANATOMY

Underhill, F. P., Honeij, J. A., and Bogert, L. J.: Studies on Calcium and Magnesium Metabolism in Disease. II. Calcium and Magnesium Metabolism in Multiple Cartilaginous Exostosis. *J. Exper. M.*, 1920, xxiii, 65.

In a previous paper the authors showed that in leprosy calcium is retained to a marked extent. Magnesium was also retained but not to the same degree. In this article observations upon two selected cases of multiple exostoses are presented. The authors describe their patients and append a long series of tables giving the results of their investigations which they summarize as follows:

In the stabilized stage of exostosis the calcium exchange differed little from that of normal individuals whether the abnormal subject was maintained upon a diet poor or rich in calcium.

In the progressive stage of the disease the calcium metabolism was markedly different from the normal in that calcium was lost from the body in large amounts when the subject was maintained upon a calcium-poor diet. This excessive elimination of calcium occurred by way of both the urine and feces in a normal ratio. When the subject was placed upon a diet rich in calcium, the calcium was retained to an extent not widely deviating from that in normal subjects, but when he was again placed upon a calcium-poor diet the calcium was again eliminated in excessive amounts.

In the stabilized stage of exostosis magnesium excretion was two or three times greater than the intake whether the subject was maintained upon a diet poor or rich in magnesium.

In the progressive stage of the disease the general type of magnesium excretion resembled that of the

also for the medical treatment of all other complications of pregnancy and the puerperium. It is in reality a rest ward since no patient requiring a major operation is admitted to it. On admission, a careful, general, aseptic bimanual examination is made. At the same time a culture is taken from the uterine cavity with a Little's tube if the cervix is sufficiently patulous, but if it is firmly closed, this step is eliminated as dilatation would of course entail a certain amount of traumatism. If retained placental tissue is presenting through the partially dilated cervix, it is gently removed with the finger or the ovum forceps. No other local manipulation in or out of the uterus is performed. The patient is put to bed, and if the infection is of recent origin and appears rather virulent, the head of the bed is elevated. The object of the Fowler position is to facilitate drainage and, if possible, to limit the infection to the pelvis.

Hyperpyrexia is controlled by hydrotherapy. Mild fever requires no treatment. Fluids (chiefly water) are supplied plentifully—by mouth, if

ment small doses of calomel are sometimes administered. In cases of pelvic cellulitis or pelvic peritonitis a light ice bag is applied to the hypogastrium, and when the acute local symptoms have subsided the employment of copious douches of plain hot water twice daily is begun. Weeks may pass, however, before the patient is ready for this part of the treatment.

Drugs are considered secondary to the general supportive measures.

Experience with various methods of treating septic abortion has convinced the author that the best results are obtained by letting the uterus alone until the temperature is normal and the uterine

patients will need a curettage later on account of the menorrhagia due to endometrial changes consequent to this retention.

Summing up the immediate results, there were 33 severe cases of blood-stream infection with 8 deaths (2 of these patients were moribund on admission); 23 cases of pelvic cellulitis, in 17 of which the exudate disappeared completely, in 4 of which

complete in all of which there was complete recovery (86 of these patients had slight fever for a few days). The patients the author has seen subsequently were in good health and had no pelvic symptoms. Some of them have since passed through normal pregnancies and labors. None of them has been admitted to the gynecological service for operation for tubal or ovarian infection, and few, if any, have returned to the other gynecological wards of the hospital.

As about 50 per cent of the cases of salpingitis operated on are traceable to abortion followed by some form of active local treatment, the author regards the policy of non-interference as the best policy in the types of infection under discussion.

EDWARD L. CORNELL.

homotransplanted kidney in two minutes and forty seconds.

In making a homotransplantation of the kidney it is possible to get a satisfactory arterial anastomosis by suture when the renal artery is less than 1 mm. in diameter.

HOWARD A. McKNIGHT.

Marine, D., and Manley, O. T.: *Homeotrans-*

plantation of the spleen in the rabbit. *Ann. Surg.*, 1920, LXXX, 113.

The authors have been unable to find any references in the literature to the transplantation of fragments of spleen to parts of the body widely separated from the normal neurovascular field of this organ other than those referred to by them in 1917. At that time they reviewed the literature and reported their first experiments with spleen homeografts and autografts in 15 rabbits. In this article they give the data of further experiments with homeografts and autografts and report certain general physiological reactions relative to the spleen which this study has emphasized. The results of these investigations are summarized briefly as follows:

No instance of the survival of spleen homeografts for more than one or two weeks was observed, although the possible advantages of consanguinity, age, and splenectomy were fully utilized. This was in sharp contrast to thyroid, sex gland, and adrenal cortex homeografts, 90 per cent of which survived for a period of thirty days. It suggested that the spleen is a stronger antigen and excites a greater degree of immunity more quickly.

Autografts as a rule survived and grew, failures

being infrequent. The younger After sexual maturity, however, age became a negligible factor.

Removal of the spleen was a powerful stimulus to the growth of transplants. The effect varied inversely with the age of the animal and usually was negligible after sexual maturity. The influence of age and splenectomy suggested that the spleen is most important in early life and after sexual maturity is either unimportant or its functions are readily assumed by other tissues (haematopoietic). Anatomically the spleen is a highly complex structure, but biologically all its major elements are simple as is indicated by their uniform and marked regenerative capacity.

A tendency for grafts to involute or atrophy with age was noted, and some of the grafts made into old rabbits without removal of the spleen underwent complete atrophy. Grafts made in young splenectomized rabbits were observed for more than three years and were considered permanent. There was some evidence that subcutaneous autografts reacted to infections in the same way as the intact spleen.

GEORGE E. BELBY

Brown, W. H., and Pearce, L.: *Experimental*

749-

From a study of the phenomena of the primary infection, on the one hand, and the phenomena of local spread or dissemination, on the other, it was seen that a multiplicity of lesions developed in the testicle and scrotum of the rabbit which had much the same characteristics irrespective of their origin. Some of these lesions were clearly recognizable as primary lesions or parts of a primary reaction to infection, while others were just as clearly the results of dissemination of the virus from a primary focus of infection.

The effort to draw a sharp line of distinction between these two groups of lesions or between a primary and a secondary stage of infection in the rabbit, however, was largely an arbitrary procedure. The fact was that the tissues of the scrotum and testicle of the rabbit constituted favorable surroundings for the localization and development of pallidum infections. Under ordinary circumstances a large part of the reaction to infection which expressed itself in the formation of lesions recognizable by ordinary methods of examination took place in these tissues. These lesions presented certain broad and general characteristics without regard to whether they were primary or secondary in origin; the reaction was merely a reaction to a syphilitic infection which in either case might assume the most diverse character.

Further, it appeared that in rabbits infected with such strains of *treponema pallidum* as the authors used the virus was never confined to the area occupied by the so-called primary lesion, or chancre, but always spread and gave rise to a regional adenopathy. There were no lesions to indicate the progress of this dissemination, but an examination of the inguinal nodes showed that dissemination occurred very soon after inoculation, and a pallidum reaction was detected in these glands even before infection was recognized in the scrotum.

Subsequently lesions developed in all parts of the scrotum and testicle, sometimes involving the entire testicle or scrotum. Lesions with such locations as the testis, the tunics, and the dorsal folds of the scrotum. In some instances more or less continuous lesions formed along the course of the perivascular lymphatics, suggesting that this was one path taken in the dissemination of the organism.

It was probable, however, that lesions of a gross character developed more as a result of the accumulation of spirochetes than as the result of mere invasion of the lymphatics since they were not a constant accompaniment of the local infection, while invasion of the lymphatics and extension of the infection to the regional lymph nodes occurred in all cases.

GEORGE E. BELBY.

Thompson, L.: syphilis of the Kidney. *J Am. M. Ass.*, 1920 lxxv, 17

The importance of syphilis of the kidney is often overlooked. The text books on medicine pay scant attention to the subject. Renal syphilis was first recognized clinically by Rayer in 1840. The condition consists of the following varieties:

- 1. Early involvement (1) transient albuminuria; (2) acute and subacute nephritis
- 2. Late involvement (1) chronic interstitial and parenchymatous nephritis, (2) amyloid kidney; and (3) gummata

Transient albuminuria is due to the toxins of the spirochaetes and represents the response of the tissues to toxic irritation. There are degenerative changes in the epithelium of the convoluted tubules and a small quantity of coagulated serous exudate in the glomeruli.

Acute syphilitic nephritis may occur at any time after chancre but commonly develops about the fifth month. It is insidious in onset and characterized by edema, anasarca, arcites, asthenia, loss in weight, lumbar pains, nausea, and oliguria. A large quantity of albumin and numerous tube casts, leucocytes, epithelial cells, and lipoids are found in the urine.

Chronic syphilis is a weeks or both of the patient's

urine

and urine is normal except for a trace of albumin. Symptoms resembling those caused by stone or malignant tumor may develop.

spirochaetes in catheterized specimens, and particularly the favorable effect of specific treatment. It should always be borne in mind, however, that nephritis of other etiology may occur in the syphilitic patient.

The prognosis of syphilitic conditions of the kidney is better than that of similar conditions which are not syphilitic as the former, with the exception of the amyloid syphilitic kidney, clear up following specific treatment. The syphilitic kidney is most resistant to treatment and usually fatal.

caution, the urine being examined for albumin and casts.

potassium citrate, and cathartics should be administered, and hot packs applied to promote diaphoresis. Mercury should be withheld until the urine is free or nearly free from albumin, while arsphenamine should be administered in doses not to exceed from 0.1 to 0.2 gm given at weekly intervals.

In cases of gummata large doses of potassium iodide, mercury, and arsphenamin are indicated.

BENJAMIN F. ROLLER.

Various opinions have been expressed regarding the nature of the hypernephroma or tumor of Grawitz and the value of operative treatment. The

found that 39.6 per cent remained cured for four years after nephrectomy. Paschen also reviewed a large number of cases treated surgically. In 54 cases of his own 35.19 per cent of the patients remained well after three years, while in 268 cases he collected from the literature 17.17 per cent were reported as cured. Paschen has been criticised, however, as in his report he included cases operated upon less than three years before. According to Rovsing, recurrences and metastases take place even after six, eight, and ten years. Often the patients are so old at the time they are operated upon that they die subsequently of other diseases. The results of the operation for hypernephroma are definitely established.

The histology of hypernephroma is of definite conclusion from the growth.

1. Roentgen rays coming from parts of the tube other than the focal spot. These may be better designated as "parasitic rays."

2. Reflection of the roentgen rays. Atoms of articles results beam

without other change.

3. New beams formed when roentgen rays of sufficiently short wave length (due to proper high voltage operation) strike certain atoms. These are true characteristic secondary rays. The quality of such new beams depends on the atomic weight of the affected atoms. In some cases such beams are of interest to the therapist.

If thin metal filters are close to the skin and receive roentgen rays of short wave length in sufficient quantity the characteristic easily absorbed long-wave-length radiation may injure the skin. It may give undesired results also when metallic ointments or medication are present in the patient's tissues.

The general facts stated in the article are summarized thus:

1. The electrical conditions of operation fix absolutely the radiation delivered per second by a given target; hence adequate control of these conditions will make possible complete duplication of radiation as regards both amount and quality.

2. The two factors to be borne in mind are: (1) spark gap or tube voltage; (2) current in milliamperes. Of these, the former is by far the more important.

3. The amount of radiation received by a given layer of tissue when the tube is operated for a definite time under prescribed electrical conditions depends on: (1) the distance from the target; (2) the nature and thickness of all material through which the rays passed before they reached the tissue treated.

4. The reaction of living tissue to the roentgen

is such that the biological effect is dependent on the particular wave lengths absorbed.

6. The biological effect doubtless depends not only on the total amount absorbed, but also to some extent on the rate of absorption; in other words, on the frequency of treatment as well as on the quantity of radiation.

7. Layers of tissue near the surface of entrance always receive and absorb more radiation than the deeper layers.

8. The inequality of absorption between the deep and surface layers due to the decrease of the intensity with the distance is reduced when the distance of the tube from the skin is increased.

9. The inequality of dose between the different layers is reduced by the use of filters.

10. This inequality is reduced also when a moderately high voltage is employed.

ADOLPH HARTUNG.

Cameron, D. F.: A Comparative Study of Sodium Iodide as an Opaque Medium in Pyelography. *Arch. Surg.*, 1920, i, 184.

This article gives the results of a comparative experimental study of the properties of the substances commonly used in pyelography.

thorium nitrate were compared with a solution of sodium iodide as to their opacity to roentgen rays, toxicity, osmotic pressure, degree of irritant action, and viscosity. The results and conclusions are summarized as follows:

1. The investigation of the comparative opacity of several pyelographic mediums shows that the molar, or 13.5 per cent, solution of sodium iodide is fully as opaque as the 3 molar, or 25.2 per cent, solution of sodium bromide and definitely more opaque than the standard neutral thorium solution which is correctly designated as a $\frac{1}{2}$ molar thorium nitrate solution, but commonly called the "15 per cent" solution.

2. The kidney function as determined by the usual blood, urea, nitrogen, and creatinin determinations and phenolsulphonethylbalein tests, both in the dog and in man, is not changed by the introduction of the molar and $\frac{4}{3}$ molar solutions of sodium iodide into the kidney pelvis even when, experimentally, the latter is kept distended by the solutions at the secretory pressure of the kidney for twenty-five minutes. The same results are obtained also with the 3 molar sodium bromide solution.

3. When given intravenously to dogs, the 25 per cent solution of sodium iodide, as well as the 25 per cent sodium bromide solution, produces no apparent immediate toxic effect. The blood pressure and respiration have remained unaffected when 50 ccm. of each of these solutions have been injected intravenously into a 30-lb. dog within a period of ten minutes. The 13.5 per cent sodium iodide solution, however, is the solution used for pyelography. Solutions of potassium salts, whether bromide or iodide, are very toxic when given intravenously.

4. The comparatively rapid absorption of different substances from the kidney pelvis, as observed by Burns and Weld, is confirmed by the fact that the contents of the kidney pelvis of a dog fail to respond to the usual tests for iodide from one and a half to two hours after the pelvis has been filled with a molar of $\frac{4}{3}$ molar sodium iodide solution which was retained in the pelvis by occluding the ureter.

5. The sensory stimulation or irritation of the kidney pelvis produced by the three different mediums investigated is probably very slight, but marked differences are obvious when tested on the tongue, the thorium solution causing the least stimulation and the 25 per cent bromide the greatest.

6. The viscosity of distilled water, the molar sodium iodide, the 3 molar sodium bromide, and the standard thorium solutions, as determined by

Kolischer believes that the bladder should be opened for drainage and for the treatment of

applied with a specially built cystoscope which is held in place by means of a mechanical arm attached to the table. The bladder should be moderately distended with water. Radiation is given for one hour, one to three times per week, depending upon the size of the tumor and the reaction.

A differential diagnosis between benign and malignant papillomata is not of great clinical im-

portance as the most efficient means of combating malignant growths. The author always supplements this treatment with radium therapy.

HARRY L. STANBURY

Geraghty, J. T.: The Value of Radium in the Treatment of Bladder Tumors. *Southern Medical Journal*, 1920, XII, 511

Before 1910 the only method of treating bladder tumors was excision by operation. Recurrences were frequent.

Up to 1910 removal of a papilloma by operation since the introduction of fulguration, however, only one case of papilloma has been treated by operation. Vesical tumors which respond most readily to fulguration are the benign ones.

In very carcinoma.

In the author's experience it is frequently possible to distinguish between a malignant and a non-malignant tumor by means of the cystoscope, but a differential diagnosis between the malignancy has advanced papilloma carcinoma in the bladder wall has taken place. Some of the indicative of carcinoma. In advanced malignancy usually indicate cancerous infiltration of the bladder wall. Small tumor nodules around its margin of invasion of the bladder wall seen beyond the prostate gland are indicative of value in the diagnosis of the posterior bladder and when the induration can be felt.

Geraghty is of the opinion that the tumors covered by infiltration has taken place is done only occasionally as usually sufficient. In many

Lecithin other most similar carcinoma nature be present.

The general association is in favor of Geraghty.

While the early pain indicates the resistance to the ing changes.

It is important to be careful of the carcinoma.

Geraghty's experience is that the use of radium has not been

as frequent as the tendency of bladder tumors to recur, recurrences being observed in about 30 per cent of the cases treated.

Radium has proved to be a valuable aid in the treatment of bladder tumors, and while the results obtained in the infiltrating types are far from satisfactory, an improved technique whereby more intensive radiation may be given safely, may offer a more encouraging outlook in the future.

GILBERT J. THOMAS.

with the bladder mucosa. In malignant papilloma alone, there being no evidence of invasion of the connective-tissue framework. In a papillary carcinoma the epithelium breaks through the basement membrane, invading the axis of the papilla, its main stalk, or the bladder wall itself.

Geraghty

vigorous radiation with radium. The more malignant the growth the greater the amount of radiation that is necessary. When extensive infiltration has taken place it is impossible to cause the complete disappearance of the tumor with radium.

In treating the malignant type of papilloma Geraghty has observed that those which are resistant to fulguration are easily destroyed by fulguration after they have been radiated.

As early papillary carcinomata are stimulated to growth by fulguration, radium alone is used except in those cases where there has been extensive infiltration of the bladder wall.

Geraghty's routine is to radium all papillomata and all tumors except those which are benign, in which fulguration effects a cure. Between the two methods of radium element are used. The radium treatment

or exposures too frequently repeated should be borne in mind. As regards the technique, experience is by far the most important factor making for

giomata, and (3) pigmented angiomas. These types blend so that at times the differentiation is difficult. Each type, however, is a distinct entity

an understanding of the pathologic changes which may occur in these parts, and intelligent consideration of the case history and clinical findings in their relationship to the radiographic picture. Through the shadows produced by different densities of the tissues or foreign substances the radiograph is a faithful record. The determination of the meaning of these shadows is a task which at times assumes the proportions of a Chinese puzzle. When studied with the clinical findings of the case, some radiographs may be diagnosed almost instantly while others must be carefully inspected with the magnifying glass and several films of the area must be taken from varying angles with different lengths of exposure and tubes of hard and soft quality before a satisfactory diagnosis can be made. When examining a radiograph some of the particular conditions which should be looked for aside from the favorite rarefied area are thickening of the bone about the root apices due to traumatic occlusion, pyorrheal absorption of the alveolar process, carious cavities in the teeth, secondary caries under fillings or the edges of crowns, pulp stones, exostosis of the roots, fragments of roots of extracted teeth, impacted or unerupted teeth, foreign bodies, and necrotic or cystic areas.

A few of the physiological structures which must not be confused with pathologic conditions are the mental foramen, the inferior dental canal in the mandible, the anterior palatine canal, the antrum, the nasal cavity, and the coronoid process of the mandible. Areas about young teeth just erupting or recently erupted should not be mistaken for abscesses. Teeth which have been undergoing orthodontic manipulation will frequently show what appear to be pathologic lesions in the bone about their root apices.

ADOLPH HARTUNG.

Newcomet, W.S.: The Treatment of Angiomas with Radium. *Am J Roentgenol*, 1920, n. s. vii, 337

Angiomas occur frequently and numerous methods are used to remove them. They are removed usually for cosmetic reasons or because they interfere with the free movement of the adjacent parts.

Radium therapy is the ideal method as it destroys certain cells without destroying the tissue *en masse* as do hot water, caustics, CO₂, ice, etc. The nevus should be treated as soon as it is discovered as spontaneous enlargement and malignant degeneration may take place at any time. Early treatment of naevi present a

which cannot
For conveni
into three groups: (1) hæmangiomas, (2) lymphan-

difficult to treat. In the extensive lesions the normal tissues are largely replaced by the vascular nevus. Since radium rays cause destruction and obliteration of these vessels without replacement by normal epithelium or epithelial structures, such as hair, down, glandular structures, etc., it is difficult to get an inconspicuous result in such cases. Two cases of lymphangioma were treated, but the outcome was not satisfactory. In cases of pigmented lesions the diagnosis is important as some have proved to be melanotic sarcomata. A history of sudden enlargement of an ordinary mole should be looked upon with suspicion. When a mole has a deeply infiltrated base good results are obtained even if the nevus is covered with hair.

A standard technique is important as the results depend upon the proper amount of irradiation. Too small dosage is preferable to over-dosage with the production of ulceration. When repeated treatments are necessary, it must be borne in mind that subsequently the part will not tolerate the dosage of the first application. The average dose should be a dose which produces erythema, and must be judged according to the applicator used, the filter, and the skin distance. The skin distance is the most important factor and varies directly with the depth of the nevus. The length of exposure is increased with the distance.

In the cases reviewed, flat applicators, tubes of radium and emanation were used at first, but because of the irregular surface of the lesions, the plaques and emanation were discarded and the tubes were used exclusively. Since the skin which adjoins the nevus is usually very sensitive, lead screens were used to protect it and to prevent the breaking down of the healthy skin. In cases in which CO₂, ice, hot water, iodine, etc., had been used the lesions were treated as if they had been irradiated previously.

As the lesions varied so extensively, no definite dosage was given. In general, from 20 to 140 milligrams were used for from two to four hours at each application, and from 3 to 60 treatments were given.

Some of the complications noted were ulceration,

less scar formation.

were all that could be desired. In 86 cases selected for radium therapy the treatment was a failure in 7,

The most important step is the diagnosis of the lesion and the relief of the urgent symptoms.

claims we must be on guard against a tendency to place patients in certain classes with respect to treatment as such a classification means group handling, which does not take into consideration the requirements of the individual case.

indicated, measures for the relief of absorption and kidney insufficiency should be instituted so that a complete removal may be done at a later date

In very many cases congestion plays a very important part, and when this condition is relieved little if any true hypertrophy remains. It is in such cases especially that operation should not be performed unless indicated definitely.

In a series of 147 of the author's cases there were 3 deaths. Incontinence resulted in 3 instances in which an operation by the perineal route was done, a perineal fistula persisted in 2, and nodules of the prostate were left about the vesical neck in 2 others. In 1 case in which a one-stage suprapubic prostatectomy was done death resulted from hemorrhage which occurred during continuous irrigation, and in another, from renal insufficiency. In 1 of the cases treated by a two-stage operation death was due to uræmia.

safest, is based on the best principles from the anatomical, physiological, and pathological standpoints, involves fewer complications, and gives the best functional results.

In every case he uses at operation a Hagner bag or a Pilcher modification of it to prevent bleeding. The large drainage tube is removed twenty-four

are given by rectum at frequent intervals. The average time for closure of the wound is twelve days. The catheter is retained in the bladder for 12

Bugbee would limit perineal prostatectomies to suppurative prostates not permitting preliminary

drainage, prostatic calculi, and those few cases of malignancy which warrant operation and in which the malignancy begins in the posterior lobe which cannot be reached from above. Louis Gross.

Deavor, T. L.: The After-Care in Suprapubic Prostatectomy; Some New Features. *Am. J. Surg.*, 1920, xxiv, 181.

Deavor enumerates the various points in favor of both the suprapubic and the perineal prostatectomy, making these comparisons to bring out more fully the special features which should be recommended in the postoperative treatment. From the standpoint of mortality, prompt recovery, final results, and general satisfaction on the part of the patient the suprapubic operation is preferred.

The author drains by gravity and always uses the largest catheter as he claims that the better the

open the way for the larger catheter, Deavor drains through the urethra and the suprapubic wound, closing the bladder tightly by a purse-string suture. He employs the "drip apparatus" for continuous drainage and flushes the bladder at frequent intervals, using ice-cold boric acid solution when the patient's condition will permit it to check postoperative oozing and for its soothing effect. If clots form he draws them out by suction through the catheter or the suprapubic tube. During the period of drainage he changes from soda to saline and then back again to the boric acid solution as these changes prevent the incrustation of urinary salts around the catheter.

The upper tube is removed in from two to four days and a cut-off is applied to the catheter to be released by the patient himself every half hour for urination. The period of retention is then gradually lengthened and the suprapubic wound is strapped for more rapid closure.

The author insists that as a rule patients are dismissed too early. In the majority of cases positive signs of improvement will be noted if the postoperative treatment is faithfully carried out, especially as regards the smaller details which are so often overlooked. Louis Gross

Stanley, L. L.: Experience in Testicle Transplantation. *California State J. Med.*, 1920, xviii, 250.

During the past two years 11 men have been operated upon at San Quentin prison for the implantation of human testes taken from recently executed convicts. In the past four months 21 transplantations have been made with testicular material taken from young rams.

Details as to the site of the implantation, the amount of transplant used, and the results obtained in each case are given.

of reason and is known by the hospital authorities to be in danger of self-destruction, the authorities are in duty bound to use reasonable care to prevent such an act.

Another question presented in this case was as to the liability of the hospital even if it had been guilty of negligence. This hospital is of the class commonly known as charitable corporations. It was founded and its buildings were erected partly by money donated and partly by money borrowed. It is not maintained for profit, but most of its patients are pay patients, and the receipts from these patients largely exceed the cost of maintaining the hospital. Under these circumstances the hospital is liable. The verdict rendered for \$6,500 was upheld by the Supreme Court of Minnesota.

JOHN A. CASTAGNINO.

Recovery for Services Not Supported by Evidence.
Huntley vs Geyer (N. D.) 175 N. W. R., p. 619

In this case a physician sued to recover for professional services rendered the son of the defendant who was 24 years of age. The son lived with his father and mother, but operated an adjoining farm

to do with it. The case was reversed for a new trial inasmuch as the physician should have sued the son rather than the father. JOHN A. CASTAGNINO.

May Testify to Making Examination But Not As To Result. *Livingston vs Omaha & C. B. St. Ry. Co (Neb) 175 N. W. R., p. 662*

In endeavoring to rebut testimony that the plaintiff was free from venereal disease the defendant in this case desired to prove that the plaintiff called upon and was examined by a physician. The court (Nebraska) held that the physician might testify as to whether the plaintiff called upon and was examined by the physician but he would not be permitted to testify as to the result of the examination.

(The court did not state the reason for this rule, but it arises by virtue of the fact that in many states conversations between physician and patient as well as the results of examinations of the patient's

body constitute confidential communications which are not subject to disclosure even in a lawsuit. However, there are other states which hold that such communications and examinations are not confidential. Illinois is a notable example of the latter.)

JOHN A. CASTAGNINO.

Cutting Hole in Bladder—Skill and Care Required.
Krinar vs. Westerman (Mo) 216 S. W. R., p. 938.

In this case the plaintiff claimed that the defendant, a physician, had represented that he was especially skilled in removing fibroid tumors of the uterus. She thereupon employed him but charged that in the performance of the operation he cut a large hole in the bladder, that he neglected to mend the bladder at once, and that either during or after the operation he so cut or tied off the left ureter that both the left ureter and left kidney entirely lost their function and became atrophied.

The physician admitted that he cut an opening in the patient's bladder, but claimed that it was necessary in order to remove the tumor, and that the cutting was not negligently done. He admitted also that he performed two subsequent operations in an effort to close the opening, but was unsuccessful on account of the fact that the parts were diseased. The testimony, however, seemed to corroborate the patient to the extent that there was no diseased or cancerous condition. Before the operation she had not suffered from kidney trouble. A fair inference from these facts would be that the physician had destroyed the left ureter in one of the operations. According to the court, "the operation he attempted to perform was a delicate one and required skill. He proved not to be equal to the task."

The court instructed the jury that in such a case it was the physician's duty to exercise reasonable skill and care such as an ordinarily skillful and care-

this to be a proper instruction to the jury. A judgment of \$25,000 was therefore affirmed.

JOHN A. CASTAGNINO.

SURGERY OF THE EYE AND EAR

EYE

Hardy, W. F.: The Reactions of the Ocular Apparatus to Syphilis. *Am J Syphilis*, 1920, iv, 438

and chronic manifestations which may affect the eye. Those of the lachrymal apparatus are infrequent but later manifestations causing "saddle nose" interfere with the drainage and predispose to dacryocystitis.

Taking the tissues of the eye in order, Hardy mentions the most frequent findings in secondary and tertiary lesions, including the paralyses of the ocular nerves. As complications he mentions plasma exudate and retinal detachment. Pri-

ma signs occur. Signs of enlarged lymphatic glands, arthritis, and deafness must not be overlooked.

THOMAS D. ALLEN

EAR

Hays, H. M.: The Relation of Hypertension and Hypotension of the Membrana Tympani to Deafness and Tinnitus. *N. York M J*, 1920, cvi, 1067

Hays makes a plea for a closer study and classification of cases of deafness and tinnitus so that the treatment may be more scientific. A case should be studied to determine whether the drum is in a state of hypertension or hypotension. The proper treatment for one type is diametrically opposite to the other.

Pattee, J. J.: Misleading Conditions in Acute Suppurative Otitis Media. *Colorado Med*, 1920, xvii, 180

In discussing the conditions which sometimes complicate the diagnosis in acute suppurative otitis media the author calls attention especially to the fact that extensive caries and bone destruction may

be present without elevation of the temperature and without tenderness. If the streptococcus capsulatus is found, operation is indicated in spite of the absence of the clinical signs of fever, tenderness, and pain. Occasionally otitis externa simulates mastoiditis so closely that only the functional

upon, but the other, which occurs in adults more posteriorly in the region of the emissary vein, is more urgent. In the second type there is induration, but no fluctuation as in the first type. The condition occurs in chronic cases and frequently is a sign of extensive pathologic changes in the region of the sinus or brain.

A copious discharge should not be regarded as favorable as in such cases the mastoid is involved. If the copious discharge continues beyond the third or fourth week, operation is the safest procedure.

Orro M. Rorr

Young, G.: Preventive Mastoidotomy. *Glasgow M J*, 1920, n. s. xii, 43

The author urges early operative interference in

cases the conservative operation is indicated when the conversational voice can be heard with the affected ear at a distance of more than 3 ft; the radical operation, when the conversational voice can be heard with the affected ear only at a distance of less than 3 ft; and the modified operation, when both ears are diseased, unless hearing in the affected ear is negligible.

Exceptions to these indications are cases of cholesteatoma, infection by the tubercle bacillus or Vincent's spirillum, or recurring polypi. These should be treated by the radical operation.

Orro M. Rorr

Muecke, F. F., and Hill, C. G.: Symptomless Influenzal (Streptococcal) Mastoiditis. *Lancet*, 1920, cxlix, 241.

Numerous complications from very acute influenzal mastoiditis, such as lateral sinus thrombosis, perisinus abscess, and extradural abscess, are described as appearing without the usual signs or symptoms of mastoiditis. The characteristic features in these cases in the early stages are the same as those of the ordinary streptococcal ear,

tute. This institute has clinical, polyclinical, and X-ray departments. The great advantage of such a monopoly is becoming recognized.

The equipment consists of 0.9 gm. of radium which is divided for surface use and for use in the well-known Dominici tubes. The tubes are from $\frac{1}{2}$ to 3 cm. long and from $2\frac{1}{2}$ to 4 mm. thick. They are made of lead, silver, gold, or platinum and contain from 1 to 7 ctg. of radium salt.

In gynecological work the Dominici tubes are used exclusively. They are prepared according to the desired intensity of the rays in flat boxes of 6 to 12 pieces or in somewhat flattened cylinders of 5 pieces. The thickness of the walls of these boxes and cylinders corresponds to a filter of 2 mm. lead, and the total filter strength is 3 mm. of lead, the wall of "

For which used h the Dominici tube is inserted.

The therapeutic principle followed is large doses, short intervals between treatments, hospital observation for long periods, and simultaneous intensive X-ray treatment. The dosage should amount each time to about 200 mg., of which from 60 to 70 mg. should be placed in the uterus and the rest in the vagina. By intra-uterine treatment it is possible to attack a cervical tumor from all sides, reaching at the same time the few cancer nests in the corpus.

Paper, cotton, or rubber may be used as secondary filters. The application must be made very carefully. Forsell emphasizes the importance of protecting the rectal wall with gauze tampons. After the application of the radium absolute rest in bed is necessary. The tube should be removed after about twenty-four hours. The second treatment should be given the following week, and the third treatment one week later.

X-ray treatment given at the same time and continued for a few years is advisable: 30 H over four areas (2 posterior and 2 anterior) and 4 mm. filters of aluminum or 0.5 mm. filters of copper. There is little danger of X-ray burns when careful use is made of metal and secondary filters. The danger of infection is greater as the surrounding tissues are never rendered entirely aseptic. Rectal and vaginal fistulae are rare complications.

Of 66 cases treated in the year 1914-1915, 18 (27.3 per cent) remained cured. Of these 18 cases 14 were inoperable. One case in which recurrence set in after operation was cured by radium treatment. Of the operable cases, 4 (44.4 per cent) were cured. Radiotherapy is therefore not less effective than surgical treatment.

SAXINGER (Z)

ADNEXAL AND PERI-UTERINE CONDITIONS

Grant, W. W.: Femoral Hernia of the Ovary. *J. Am. M. Ass.*, 1920, lxxv, 289.

Of 36 cases of femoral hernia tabulated by Englelicb, the hernia was an inguinal hernia in 27 and a femoral hernia in 9. Of 137 cases reported by

Heineck, only 13 were cases of femoral hernia. It is clearly manifest that most femoral herniae are of the inguinal variety (eight times as many as of all others), that such herniae are not common, and that

tum period of life." A lax mesentery and stretching and mobility of the broad ligaments by pregnancy are probably contributory causes.

The author reports two cases which may be summarized as follows:

Case 1. A widow, aged 37, the mother of two children, had had a femoral hernia of the left side for three years which had caused little pain except when it protruded, but finally became non-reducible because of mild inflammatory attacks. At operation a small, somewhat atrophied ovary was removed from the sac. The patient made a complete recovery.

Case 2. A widow, aged 56 years, the mother of two children, had been troubled with a femoral hernia of the left side since 1892. About five years before operation she noticed an enlargement or tumor just below the hernia. At operation a normal ovary was found lying just below the femoral ring which greatly constricted the omentum. At the lower end of the omental mass was a follicular ovarian cyst.

The author describes the surgical technique necessary in cases of this type. He advocates the use of non-absorbable suture material as it is of great importance that the reconstructed canals and rings should be strongly supported until the fascial tissues are in a perfect state of repair. CARL H. DAVIS.

Lanza, C., and Pantolini, M.: The Parovarium and Its Cystic Degeneration (Parovario y degeneracion quistica del mismo) *Rev. argent. de obst. y ginec.*, 1920, iv, 40.

Lanza and Pantolini report a case of cystic degeneration of the parovarium, the salient features of which were as follows.

The patient was 24 years of age and married. She had had one normal delivery. The condition of which she complained began about a year previously with abdominal distention and mild distress of an indefinite nature. She had been unable to wear a corset for eight months. Since the birth of her child five years previously, menstruation had been irregular. On one occasion there had been complete amenorrhoea for twelve months. This was followed by a copious flow for twelve days and another period of amenorrhoea. During the last five months there had been irregular bleeding and marked anaemia.

On physical examination the abdomen was found to be regularly enlarged with limited respiratory movement and flaring of the rib margins. On palpation a large, round, elastic, and movable tumor

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Klemptner, L.: An Original Method of Submucous Operation on the Septum. *Ann Otol, Rhinol & Laryngol*, 1920, xxix, 447

After making the incision through the mucosa on the convex side and elevating it, the author makes an incision through the cartilage of the other nostril $\frac{1}{2}$ in back of the first incision on the opposite side. As the mucosa of the opposite side has already been elevated, there is no danger of perforation during the incision of the cartilage. Orro M. Rorr.

Mullin, W. V.: Indifference of the Laryngologist toward Tuberculous Laryngitis and the Tuberculosis Problem. *J Am M Ass*, 1920, lxxv, 39

The author draws the following conclusions.

1. A more active interest in tuberculosis should be taken by laryngologists

2. There should be more thorough and uniform teaching of the subject. This instruction should be carried on in such a way that the student will have an opportunity to examine large numbers of incipient cases and to see them repeatedly so that he may familiarize himself with the laryngeal image observed in tuberculosis as compared with that seen in other allied conditions

3. A committee of laryngologists representing the various laryngological societies should be formed to meet with a committee from the National Association for the Study and Prevention of Tuberculosis for the purpose of standardizing the literature and instruction regarding the disease and to stimulate clinical investigations and pathologic research. Orro M. Rorr.

Wilder, H. H.: Roentgenography of the Nose and Sinuses. *J Am M Ass*, 1920, lxxv, 375

The roentgenogram outlines the sinus better than transillumination and offers definite limits to guide the operator. It alone furnishes positive evidence

parts within the cranium posterior to the sinuses. The transillumination of the sinuses is a valuable aid by the clinician himself, while the roentgenogram correctly

made is the product of a rather highly specialized and therefore expensive technician and requires careful interpretation

The author prefers the nose-chin position in which the shadows from the lesser wings of the sphenoid and the petrous portions of the temporal bone fall on the plate outside the projection of the sinus to be roentgenographed

In transillumination of the maxillary antrum Briggs passes the light from above through the orbital plate and observes the light from the palatal and buccal surface

The advantages claimed for this method are: (1) the light passes through less extraneous tissue and through opposite instead of adjacent sides; (2) it takes less time; and (3) it is more cleanly. Orro M. Rorr.

Mayer, E., Skillern, R. H., and Sonnenschein, R.: Anesthesia in Nose and Throat Work: Abstract of the Report of the Committee on the Advantages and Disadvantages of Various Local Anesthetics. *J Am M Ass*, 1920, lxxv, 375

The purposes of this study were as follows:

1. To compare local anesthesia and its effects with general anesthesia.

2. To check laboratory data by clinical data

3. To ascertain what clinical literature offers in support of the use of the several local anesthetics in different conditions and the use of concentrated solutions rather than dilute in any case

4. To determine what cases show idiosyncrasy, with a view to determining the causes

5. To ascertain the relative merits of cocaine and the synthetic products

6. To determine whether or not hemorrhage during or after operation is greater under local than under general anesthesia.

7. To study the toxicity, noting especially injuries to the mucous membrane.

anesthesia and to make such recommendations as might be deemed advisable.

The findings of the investigation are summarized as follows:

1. There is a remarkable similarity in the clinical effects and animal experimentation.

2. None of the synthetic products equals cocaine in its local effect when applied to the mucous membrane

3. The synthetic products may be freely injected in proper doses in unlimited quantities if the injection is given slowly.

delivery of a normal child there were no symptoms. Pelvic pain then began during menstruation and soon became continuous. Repeated pelvic examinations showed the presence of a tumor in the left fallopian tube. As the pains gradually became more severe, leading at times to convulsive seizures, the patient was operated upon. An ovoid tumor about the size of a hen's egg was removed from the left fallopian tube and the patient made an uneventful recovery.

On microscopic examination, the wall of the tumor was found to be composed largely of smooth muscle with some fibrous tissue. The lining of the central cavity was a single layer of columnar epithelial cells. The nuclei were basal. Cilia were not detected. Below this epithelium was a cellular zone very similar to that of the intertubular portion of the endometrium. The cells were round or oval, the nuclei stained quite deeply, and there was a fair amount of intercellular material. This cellular zone gradually merged into the muscle of the growth, no structure resembling a submucosa being present. Evidence of acute or chronic inflammation in any part of the sections was entirely lacking.

The author's reason for recording this case is the rarity of the type of growth described.

CARL H. DAVIS.

EXTERNAL GENITALIA

Rob. ...

The author comments on the frequency of anomalies of the female generative organs and divides them into three classes: (1) absence of the uterus, (2) absence of the vagina, and (3) absence of the vagina and uterus.

Postpubertal determination of sex depends upon more than the presence of ovaries or testicles. Femininity and masculinity depend upon the proper and harmonious relation and correlation of all the internal secretions.

The patient whose case is reported was a female with all the secondary feminine characteristics and therefore a proper subject for operation. She was 24 years of age and had been married nine months. She consulted the author on account of inability to

found on each side. The uterine end of the tube terminated in an enlargement the size and shape of an olive pit which was joined to a similar body on the opposite side, thus forming a septum across the pelvis between the bladder and rectum.

The technique of the operation differed from Baldwin's method in that the dissection was made entirely by the abdominal route, an assistant making pressure from below with a blunt instrument. The other steps of the procedure were similar to those of Baldwin's operation in that a double loop of ileum was used to construct the vagina. Convalescence was normal and the functional result very satisfactory.

SIDNEY A. CHALFANT.

MISCELLANEOUS

Baldwin, J. F.: The Artery of the Uterine Round Ligament. *Surg., Gynec. & Obst.*, 1920, XXXI, 57.

The author takes exception to the statement found in text-books on gynecology that there is an artery of the round ligament which furnishes an important part of the blood supply of the uterus. The artery of the round ligament of the uterus (the external spermatic in the male) is a small branch of the inferior epigastric. Its main stem descends through the inguinal canal with the round ligament, anastomosing with branches of the external pudendal and, occasionally, with the prolonged funicular branch of the superior vesical. A small branch of this artery accompanies the round ligament inward and anastomoses with branches of the uterine, ovarian, and vesical to the round ligament.

The uterine and ovarian arteries anastomose, forming an arterial arch which gives off branches to

branches from one or more of the vesical arteries and a proximally directed branch from the artery of the round ligament.

The funicular artery, a branch of the superior vesical (the artery of the vas deferens in the male) or, occasionally, from the inferior vesical, is a small slender artery which accompanies the round ligament outward from the point where the ligament crosses the artery, anastomosing with branches from the uterine, ovarian, inferior epigastric, and external pudendal. The branches to the round ligament derived from the uterine, ovarian, and vesical may give off proximally directed branches which extend inward to the attachment of the ligament to the uterus.

In diseases of the uterus, ovaries, or tubes any of the vessels to the round ligament may become enlarged.

In more than three thousand abdominal hysterectomies the author has freely cut across the round

When the abdomen was opened a fully developed fallopian tube and ovary with a round ligament was

hemorrhage was due to the inflammatory condition.
SIDNEY A. CHALFANT.

be assumed that sinusitis is not present if pus is not found.

The following routine examination is advocated by the author.

1. Examine the nose before and after the use of cocaine and epinephrin.

2. Syringe the nose with normal salt solution, collecting the fluid in a black pus basin.

3. Transilluminate the nose with the author's frontal sinus and antrum light, beginning low on the rheostat and gradually increasing the light.

4. Make a roentgen-ray picture and compare it with the transillumination markings of the sinus.

5. Place the patient in Escat's position.

6. Puncture and irrigate the maxillary sinus and search for thickened membrane, etc. with a probe.

thickened membrane with a probe. Probe the frontal sinus gently and wash it out if there is any suspicion of disease.

8. If it is impossible to differentiate between disease of the posterior ethmoid cells and the sphenoid remove the obstructing septum or middle turbinate in order that probing may be done for the sphenoid sinus opening.

9. Use suction on all sinuses.

The author emphasizes especially the importance of infraction rather than removal of the middle concha, enlargement of normal openings, frequent washings, the use of the suction apparatus, and drainage with the least possible destruction of the anatomical structures of the nose. *Seeley & Howz.*

Anglade and Philip. Glioma of the Nasal Fossæ (Le gliome des fosses nasales). *Presse méd.*, Par., 1920, *xxvii*, 464.

Although the nasal fossæ are in the immediate vicinity of the central nervous system, they are seldom the seat of neoplasms of nerve origin. The authors report the case of an infant three days old who had a tumor in the upper part of the right nasal fossa. On the left side respiration was difficult because of deviation of the septum caused by the growth. At operation a tumor the size of a kidney bean was removed. A recurrence then developed but disappeared after applications of radium.

The tumor was kidney shaped and its pedicle corresponded to the renal hilum. The convex side was covered by the nasal mucosa. Examination showed the growth to be a pure glioma but there was no trace of sarcomatous change. Marked vascularization was noted in the vicinity of the hilum and the neuroglia formation was remarkable.

That the tumor was a true neoplasm rather than a cerebral hernia is indicated by the fact that a hernia of the brain in a very young child is not capable of showing the histologic structure of a glioma as neuroglia is very rare if not entirely absent on the cortex of the brain of the new-born.

The authors have been able to find only 4 cases of glioma of the nose in the literature. Two of these were reported by American authors. Glioma of the nasal fossæ, therefore, would seem to be a very rare tumor, but in the authors' opinion it occurs more frequently than is generally supposed.

WILLIAM A. BRYNAN

Roy, D.: A Case of Sarcoma of the Nasopharynx with Some Interesting Features. *Ann. Otol., Rhinol. & Laryngol.*, 1920, *xix*, 366.

The case of sarcoma reported was subjected to radium therapy. The size of the tumor was reduced two-thirds but death occurred from a general sarcomatous toxæmia. This patient also presented a two-plus Wassermann reaction and had received anti-leucic treatment for some time. The author is of the opinion that in cases of this type radium therapy is past the experimental stage and that the results in the case reported would have been better if the growth had not penetrated into the vascular region of the ethmoid cells.

The prognosis of sarcoma of the nasal cavities and nasopharynx is most unfavorable. The author has treated 8 cases, using every known method—operative treatment, electropuncture, Coley's fluid, radium, ligation of the carotids, etc.—but death resulted in every instance.

From a review of the literature on the different methods of treatment Roy finds that the best results have been obtained by the use of the X-ray and radium, especially radium. *Otto M. Kott*

THROAT

Cuthom, M. M.: The Technique of Tonsillectomy under Local Anæsthesia. *Laryngoscope*, 1920, *xxx*, 419.

Cuthom discusses three considerations in the removal of the tonsils: (1) thoroughness, (2) pain-

seven to ten minutes after the injection.

Speed may be obtained as follows: Each tonsil is seized with a tenaculum forceps devised by the author and the left tonsil is pulled toward the median line and freed from the pillars by means of a dissector. The right tonsil is removed with a snare. While this is being done the assistant places another snare over the left tonsil, and when the forceps and

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Paddock, C. E.: Diet in Pregnancy. *Surg., Gynec. & Obst.*, 1920, xxxi, 71

The normal gain in body weight of the mother throughout pregnancy amounts to between 20 and 30 lbs., and during the last three months there is a gain of from 3 to 5 lbs. a month. However, in the first three months the balance of gain is negative as a large percentage of women are nauseated or vomit, or have such a distaste for food that they cannot eat. The increase in tissue outside of the uterus occurs chiefly in the pelvis and abdominal walls, but there is also a general increase in all the tissues. Although it would be reasonable to suppose that such an increase in tissue would call for a greater amount of food, this is not the case. The added weight is comparable to a neoplasm or to weight gained without any apparent reason.

The author does not agree with the theory of Prochownick, published in 1889, that the size and weight of the foetus can be lessened by placing the mother upon a protein diet and limiting other foods. The consensus of opinion is that the food taken by the mother has little if any effect upon the growth of the foetus, and that the foetus will thrive at the mother's expense even if her condition is below normal. Not infrequently, however, articles appear in the medical journals in which the diet advocated by Prochownick is recommended, in spite of the fact that no definite data have been found to substantiate the theory.

From reports of physiologists we must conclude

growth.

The belief of the laity that a woman needs more food during pregnancy than before is correct only if she is working at the time. In the cases of women of the leisure class and those who refrain from all

average body weight who does an average amount of work requires 100 gm. of albumin, from 80 to 100 gm. of fat, and 400 gm. of carbohydrate. To include these elements the diet must be mixed. Of the three principal elements of nutrition albumin is the

most important. The most necessary salts are lime, sodium, phosphorus, and the salts of iron.

The author discusses the various vegetable, carbohydrate, and milk diets, and concludes that while all of them are good, a mixed diet is necessary in order to supply the essential food elements. The best plan is for the physician to find by observation the amount of air, exercise, rest, and food which is required in each case and to keep the patient under observation so that he may be able to make any necessary changes. CARL H. DAVIS.

Herrick, W. W.: Some Phases of the Circulatory Disturbances of Pregnancy: with an Illustrative Case. *Med. Clin. N. Am.*, 1920, iv, 179.

The diagnosis on admission to the hospital in the case reported was cardiac dilatation with insufficiency of the mitral, tricuspid, and pulmonary valves; arterial hypertension; congestion of the lungs and liver; moderate anasarca and paroxysmal dyspnea.

In the treatment a salt-free diet was given and the fluid intake restricted to 1,200 ccm. in twenty-four hours. Digitalis in the form of *digipuratum*, 1½ gr., was administered three times every twenty-four hours. This regimen was alternated with periods of three or four days of the Karel diet. To stimulate diuresis an occasional dose of 10 gr. of diuretin was given. With sufficient doses of digitalis the pulse rate was maintained between 60 and 80.

The result of this therapy was very satisfactory. During the first month there were no attacks of paroxysmal dyspnea and the orthopnea became less. The area of cardiac dullness diminished. The systolic blood pressure receded but the diastolic remained around 100. The patient left the hospital in ten weeks. She was then in the sixth month of pregnancy. From reports received from time to time it appears that there has been no material change in her condition. The Wassermann reaction was negative.

Since the patient left the hospital the chief dietary restriction has been salt and animal food, such as sweetbreads, liver, and kidneys, which contain an excess of nuclein. The restriction of salt seems to cause a decrease in the blood pressure.

As regards the prognosis in these cases, Herrick states that while in many the heart and blood pressure become normal, in the majority there is impaired myocardial reserve and a blood pressure which, if not high, at least tends toward the higher ranges and has an exaggerated response. In other words, the foundation of chronic hypertensive cardiovascular disease is laid with all the future menace of cardiac insufficiency, cerebral hemorrhage, or arteriosclerotic nephropathy.

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In the second type the general condition aside from the local pulmonary infection may seem satisfactory. Nevertheless rapid abortion followed by severe systemic symptoms frequently occurs. The treatment is the same as that indicated for the first group of cases.

In the third form the condition may be very grave but is due to the mechanical circulatory phenomena brought on by the advanced gestation rather than to the virulence of the infection. In such cases, in which the septicæmic manifestations are not marked, a cardiac crisis may be experienced with is characterized by marked cyanosis, pronounced dyspnea, and a fast pulse of low tension. In such cases the classical cesarean section under spinal anesthesia has been performed with good results. Details of 2 case histories are given in which such a procedure was followed by uneventful recovery.

From these results and those of other similar cases the author concludes that in cases of bronchopneumonia in advanced pregnancy in which the only grave symptom is cardiac insufficiency from mechanical causes and grave systemic manifestations of sepsis are absent the treatment indicated is that of immediate cesarean section under spinal anesthesia. Great care should be taken in the selection of the cases, however, and cases of cardiac insufficiency from mechanical causes must not be confused with those of acute myocarditis from the toxæmia of a virulent lung infection.

WILLIAM R. MEERER.

Villar, A.: The Treatment of Inevitable Abortion (Sobre el tratamiento del aborto inevitable). *Rev. argent. de obst. y ginec.*, 1920, iv, 10.

Villar classifies abortions into afebrile and febrile abortions. In the former the condition is usually not grave and, aside from the slight danger of perforation during treatment, uneventful recovery is the rule. The abortion becomes febrile when bacteria enter the uterine cavity and infect the mucosa. Little bacterial growth occurs during the first and second days of the puerperium, probably because of the bactericidal power of the blood and serous secretions of the uterus at that time. During the third day, however, the invading bacteria usually

which the toxic substances are absorbed. As soon as bacteria localize the submucous vessels dilate, the serous discharge increases, the leucocytes migrate to the area of inflammation, and granulation tissue is formed. The bacteria, on the other hand, multiply, eliminate toxins, and tend to invade the lymphatics and blood stream. When the patient experiences a chill the bacteria have undoubtedly entered the circulation so that at this stage a metastatic focus of suppuration or a thrombophlebitis may result. If the bacteria in such a case are highly virulent, the case usually terminates fatally. All therapy is useless, death usually occurring within three or four days after the abortion.

Patients with induced septic abortion rarely seek

and chills are to be expected. At this stage curettage is most dangerous even though the operator is

tion of any instrument into the uterine cavity when the bodily defences are being crumbled tends to

ion even digital curettage should not be employed as it necessitates dilating the cervix, the uterus is more or less massaged with the external abdominal hand, and complete digital extraction is difficult to perform.

In febrile abortion the author aids the natural forces in emptying the uterus. An ice bag is kept constantly on the abdomen to favor uterine contractions and 0.2 gm. of quinine is given every four or six hours. To favor

and placenta. All lavage, irrigation, and douches are forbidden. The vulvar dressings are changed three or four times daily.

to normal. Curettage is then performed and is easier and less dangerous as the uterine cavity is almost empty, the uterus is small, and the uterine walls are firmly contracted.

There are two contra-indications to the author's method of treatment, one absolute and the other relative. Violent hemorrhages which endanger life constitute the absolute contra-indication, but such hemorrhages rarely occur with high temperature. The relative contra-indication is retroflexion of a gravid uterus in which conditions are not favorable for the spontaneous evacuation of the products of gestation. In such cases curettage may be done after correction of the retroflexion.

WILLIAM R. MEERER.

There are three principal bodily defences against the entrance of infection: the lochial discharge which contains antitoxic and bactericidal substances; the migration of leucocytes; and the formation of new granulation tissue. The formation of new tissue is the most important factor as fully developed tissue

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W. ZWEIF.

. F. HAMIL-

vagina it is expressed by pressure on the fundus, the other hand being placed in the vagina for the placenta to slide upon in the same way as the heel slides down on a shoe horn. This procedure DeLee calls the "shoe-born manœuvre." Immediately after the placenta is delivered 1 ccm. of aseptic ergot is given intramuscularly.

As soon as the uterus is contracted the cervix is examined and all cervical tears are repaired.

The perineotomy is one of the most important parts of the prophylactic forceps method as it is intended to preserve the integrity of the pelvic floor, the subvesical fascia, and the urogenital septum, and at the same time to prevent injury to the child's brain. The author makes the incision when the levator ani and fascia have been stretched a little, but have not begun to tear. Beginning at the raphe in the fourchet, the skin and urogenital septum are cut with one sweep of the scissors. This exposes the levator ani pillar. The perineum falls to the opposite side, its apex attached to the fascia over the rectum and the edge of the levator ani. The vagina and the fascia over the levator ani are incised next and then the levator is cut more or less extensively, depending on the estimated size of the child, the cut being made almost horizontally in about the middle of the muscle. Bleeding is usually stopped by pressure with gauze sponges, but occasionally ligation of a vessel is necessary.

In the repair the author simply unites the parts in anatomicosurgical fashion. In the forceps delivery he follows the standard rules.

The prophylactic forceps operation is a radical departure from time-honored custom but has a sound scientific basis. It saves the woman the physical labor of a prolonged second stage and when morphine and scopolamine are given in the first stage and gas or ether is used in the second stage with operative delivery, labor is robbed of most of its terrors. The method undoubtedly preserves the integrity of the pelvic floor, the vesicovaginal septum, and the introitus vulvæ and forestalls the long train of sequelæ following pelvic laceration. In addition it saves the child's brain from the immediate and remote effects of prolonged compression. Incision in the soft parts not only shortens the second stage of labor, but also relieves the pressure on the brain and consequently will reduce the number of cases of such conditions as idiocy and epilepsy.

CARL H. DAVIS

Palmer, A. C.: Two Cases of Rupture of the Vagina during Labor. *Proc. Roy. Soc. Med.*, Lond., 1920, xiii, Sect. Obst. and Gynec., 151.

Case r. The patient was admitted to the hospital following a difficult extraction, by means of the forceps of a still-born child weighing between 13 and 14 lbs. The perineum was torn. The placenta had been removed from the abdominal cavity through the ruptured cervicovaginal juncture. The woman was very anæmic and in a state of collapse. The pulse was 120, the temperature 98°

F., and the abdomen very tender. Laparotomy was done at once.

On examination of the pelvis the uterus was found free of all attachments to the vagina except for a narrow bridge in the region of the left uterine artery and a small portion of the anterior wall of the cervix close to the bladder. The cervicovaginal juncture was torn through for more than three-quarters of its circumference. The uterus was removed as rapidly as possible, all bleeding points being ligated. Intravenous saline was given. Except for a slight rise in temperature the patient made an uneventful recovery.

This woman had had eight children previously, and there had been no difficulty in any of the other labors. The pelvic measurements were normal.

Case 2. The patient, a woman aged 47, was brought to the hospital by a midwife who had been attending her. The labor pains had been severe for some hours but there was no progress and the woman was in a state of collapse. The pulse rate was 120 and the temperature 96.5° F. The abdomen was tender, the head of the fœtus was impacted in the brim but not engaged, and the fetal heart was not heard. Forceps were applied easily, but as no advance of the head was obtained with a moderate pull, the child was delivered after perforation and crushing of the head. On examination it was found that the child had been in the abdominal cavity. The placenta was manually removed from the abdominal cavity.

An exploratory laparotomy revealed a large T-shaped tear in the posterior vaginal wall, beginning at the cervicovaginal juncture and extending almost down to the vulva. The uterus was quickly removed and the bleeding vessels ligated. Drainage *per vaginam* was maintained for twenty-four hours. One and a half pints of intravenous saline were given. The operation was followed by incontinence of urine and feces for four days, and total incontinence of urine for ten days, but after that the patient made a good recovery.

This woman had had five children previously. Four easy labors had occurred in spite of a well-marked general contraction of the pelvis; the fifth required forceps; the sixth ruptured the vagina almost completely and made laparotomy with hysterectomy necessary.

In both of these cases the purpose of the hysterectomy was twofold: (1) the control of hæmorrhage; (2) the removal of damaged and devitalized tissue as a prophylactic measure against puerperal infection.

CARL H. DAVIS.

PUERPERISM AND ITS COMPLICATIONS

King, E. L.: Non-Interference in the Treatment of Puerperal and Postabortal Infections. *J. Am. M. Ass.*, 1920, lxxv, 147.

In the treatment employed by the author a special ward is set aside for all white patients suffering from puerperal infections and is employed

Cancer of the omentum J. N. STODY. *Med. Rec.*, 1920, xxviii, 103.

A contribution to the surgery of gangrenous diaphragmatic hernia HARRING. *Arch. f. klin. Chir.*, 1920, cxvii, 977.

Diaphragmatic hernia. A. D. BEVAN. *Arch. Surg.*, 1920, l, 23.

Fetal abdominal sarcoma obstructing labor. T. D. MAHER and A. S. MUSANTE. *J. Am. M. Ass.*, 1920, lxxv, 177.

SURGERY OF THE EXTREMITIES

Diseases of the Bones, Joints, Muscles, Tendons, Etc.

The reactions of the bones and joints in syphilis A. E. HORWITZ. *Am. J. Syphilis*, 1920, iv, 426.

A case of extensive gangrene from an injection of a

Acute rheumatic periostitis A. BRUNER. *Deutsche med. Wochenschr.*, 1920, xli, 509.

1920, n. s. vii, 336

Osteochondral trophopathy of the hip joint, Legg's

1920, I, 402

Fractures and Dislocations

The treatment of gunshot fracture in Bay Hospital 22 while on duty in France, June, 1918, to January, 1919

P. ROGERS. *Wisconsin M. J.*, 1920, xix, 55.

The functional treatment of fracture of the clavicle. S. WUNDERLICH. *Zentralbl. f. Chir.*, 1920, xlvii, 562.

The treatment of clavicular fractures by means of extension S. LOERER. *Langensalz*: Wendt and Klauwell, 1920.

Dislocation of the humerus by muscular action. F. W. M. PALMER. *Brit. M. J.*, 1920, ii, 126.

Two cases of supracondylar fracture of the humerus in children complicated by compression on the brachial artery W. FORSELL. *Hygiea*, Stockholm, 1920, lxxxiii, 300.

C. PERRET. *Rev. mèd. de la Suisse Rom.*, 1920, xl, 415.

On posterior subluxation of the knee joint. L. CYRIAX.

Surgery of the Bones, Joints, Muscles, Tendons, Etc.

Accident surgery and secondary wound healing. H. RATH. *Nederl. Tijdschr. v. Geneesk.*, 1920, liii, 1707.

The autogenous bone graft L. T. RAWLES. *J. Indiana State M. Ass.*, 1920, xiii, 235.

The treatment of old bone fistulae. O. HENRICH. *Med. Klin.*, 1920, xvi, 640.

1920, xvi, 620.

The status of the treatment of gas gangrene. J. J. GUINER. *Med. Ibera*, 1920, xi, 53.

Amputation of the humerus and the inguinal. A. I.

Amputation of the leg. O. BORCHGREVINC. *Ann. Surg.*, 1920, lxxi, 697.

Amputation of the thigh J. BECKER. *Zentralbl. f. Chir.*, 1920, xlvii, 643.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Richey, D. G.: Leukoplakia of the Pelvis of the Kidney—A Study in Metaplasia. *J. Lab. & Clin. Med.*, 1920, v, 335.

This paper is based upon the study of a case of leukoplakia of the right kidney pelvis. The patient, a man 43 years of age, had suffered for a period of twenty-two years with periodic paroxysms of pain following an injury to his back. The typical attacks of renal colic were associated with pus, blood, mucus, and albumin in the urine. Cultures yielded bacillus coli and bacillus acid lactici.

The lower two-thirds of the excised kidney appeared normal. The upper one-third presented numerous cavities with only a narrow rim of kidney substance remaining. These cavities communicated freely with the pelvis and were lined by a white, silvery, finely wrinkled membrane similar to the delicately corrugated skin of the infant's scrotum. The surface of the membrane was firm and unbroken as it extended in fine processes upon the injected walls of the lesser cavities. The pelvis showed a similar metaplasia which continued downward along the ureter and resembled the streaks of leukoplakia seen at the lower end of the esophagus. There was no evidence of calculus or caseation.

Sections showed the lining to consist of a thick layer of stratified epithelium presenting a large amount of keratinization on the free surface. This was uneven in thickness, varying from ten to eighty cells in depth. In the intermediate zone polyhedral cells with definite intercellular bridges similar to the prickle cells of the epidermis were noted. No membrana propria was seen in the deepest layer of the epithelium. A tendency to invade the supporting muscle bundles had been extensively fragmented.

The pathologic diagnosis was chronic suppurative pyonephrosis and ureteritis, leukoplakia of the pelvis of the kidney and the ureter.

The author states that we do not hesitate to explain leukoplakia of the renal pelvis and ureter upon the theory of metaplasia as a histogenic transformation process. This change in the morphology of the cells from the normal transitional to stratified squamous epithelium, even to the formation of a superficial layer of keratin, a quality, which as Wells points out, might be interpreted as an intrinsic chemical alteration in the cells due to abnormal stimuli.

The author's laboratory findings coincide with those reported by Braasch, i.e., that with dilatation of the

chronically inflamed pelvis and ureter, limited proliferation and cornification of the mucosa is often seen. Until this process is sufficiently advanced so that it can be recognized in the gross as a definite whitish patch it is not leukoplakia but represents only a stage in the process. Although leukoplakia of the renal pelvis and ureter is not rare, it is less common than leukoplakia in the lower urinary passages. It is associated with chronic forms of irritation such as nephrolithiasis and inflammatory processes, either pyogenic or tuberculous.

The clinical manifestations of leukoplakia are usually those of the underlying factor, but the passage of desquamated epithelial plaques has been known to give rise to typical attacks of renal colic. In a certain percentage of cases of long-standing

HARRY A. FOWLER.

Hyman, A.: Renal Calculus with Negative X-Ray Findings. *Boston M. & S. J.*, 1920, clxxviii, 74

Hyman states that a negative radiogram is insufficient evidence of the absence of a calculus in any part of the genito-urinary tract. The lower the stone the greater the chance of its being missed roentgenographically. Renal stones fail to show in from 6 to 15 per cent of the cases, ureteral stone, in from 15 to 30 per cent, and vesical stone, in 60 per cent. In 5 of his own cases in which the X-ray examination was negative the stone was formed chiefly of ammonium urates. Three of these patients died following operation and the postmortem examination revealed stones in both kidneys. The fourth passed a yellow stone five days after the examination. The fifth recovered after the removal of a stone.

The causes of the failure of the X-ray examination are faulty technique, obesity, and the chemical composition of the stones, urates and uric acid being translucent to the X-ray. Freyer states that many stones which are not translucent will not throw a shadow when they are surrounded by inflamed kidney, condensed fat, pus, or layers of fibrin.

The author summarizes his conclusions as follows:

A negative X-ray examination means nothing. Latent kidney stones are frequent. In such stones the urates are the predominating constituent. The passage of a ureteral catheter into the pelvis does not prove the absence of a ureteral calculus. Wax-tipped bougies will often demonstrate the presence of a stone when other means fail. Conservation is the watchword in renal surgery. A nephrectomy should be done only as a last resort as the opposite kidney may be the seat of calcareous disease.

BENJAMIN F. ROLLER.

Evidently in some of these cases recurrence or metaplasia would have developed. The operative results are therefore no worse than those of operations for other malignant growths. Early diagnosis, X-ray

is not affected.

Of 20 tumors studied microscopically 8 appeared benign. Five of these patients are living and 2 died from other diseases. One had a recurrence ten years after the operation. Nine of the tumors proved to be malignant. Four of these patients died from recurrence and 2 died following the operation. In 3 instances death was due to other causes. In the unclassified cases there were 3 deaths from recurrence, 1 following operation and 2 from other causes.

KORITZINSKY (Z).

Penfield, W. G.: *Contraction Waves in the Normal and Hydronephrotic Ureter: An Experimental Study*. *Am. J. M. Sc.*, 1920, clx, 36

In his experimental work Penfield aimed at incomplete ligation of the ureter for the following reasons:

1. The resultant hydronephrosis developed more slowly but was greater in degree.

2. The resultant condition more nearly resembled clinical hydronephrosis, which usually is due to a partial or recurring obstruction.

3. Such ligation very seldom caused atrophy of the kidney which almost always follows complete ligation.

Under strictly aseptic conditions a small ventral incision was made in a rabbit or dog, a rubber band of small caliber was fastened about one ureter just above the bladder to produce partial obstruction, and the abdomen was then closed.

After periods varying from three weeks to five months the animals were again anesthetized, the abdomen was opened, the rectum was cut across at its lowest point, the intestines were reflected upward, and both ureters were exposed for their entire length. Following this exposure the specimen was placed under glass in a chamber maintained at a temperature of 38 degrees C.

After observation *in vivo* both normal and hydronephrotic ureters were removed from the animal and placed in oxygenated Lock's solution at 38 degrees C. Experiments were performed on the ureters during the succeeding twelve hours. The whole ureter was preserved intact. The contractions of a ring segment about 1 cm. long at either end of a ureter were recorded by means of loops of fine silk which were passed through the ureteral wall and out at the end of the ureter, and thus included a ring of circular muscle. These segments were connected with light, balanced writing levers which registered on a smoked drum. By this means records were obtained of the beginning and the end of a wave of peristalsis or retroperistalsis and the time required for the passage of the wave.

The conclusions arrived at as a result of these experiments are as follows:

1. The ureter is a muscular tube which, when subjected to partial obstruction, always dilates, usually *hypertrophies*, and shows an increase in its peristaltic rate.

2. Contraction waves pass in either direction with equal facility, their speed depending on the location of the area in which the spontaneous contraction is most rapid. This area is normally in the renal pelvis, but under abnormal conditions a more rapid pacemaker may be established elsewhere.

3. The formation of a contraction ring which becomes pacemaker for the ureter above and below it depends on three factors: the metabolic gradient, ureteral distention, and refractoriness during contraction and the first part of relaxation.

4. It is suggested that in the passage of a ureteral stone, trauma and inflammation increase the rate of metabolism in the ureteral wall about the stone, a constriction ring forms, and distention of the ureter and retroperistalsis follow. This would cause great distention of the renal pelvis and explain the peculiar rhythmic character of renal colic.

JOHN P. O'NEIL.

BLADDER, URETHRA, AND PENIS

Notkin, S. J.: *The Bladder Epithelium in Man* (Ueber das Harnblasenepithel des Menschen) *Anal. Hefte*, 1920, lviii, 423.

In his discussion of the structure of the epithelium of the urinary bladder in man Notkin refers to the theory of Berndorf. According to Berndorf's theory the epithelium consists of only two layers of cells. As a result of extensive investigations Notkin has come to the conclusion that while this is true in most cases, there are many exceptions to the rule. Various factors influence the number of layers. For example, in certain cases of dilatation of the bladder the number is found to be decreased, while in certain cases of proliferation it is increased.

DENCKS (Z).

Kolischer, G.: *What Should We Do with Bladder Tumors?* *Illinois M. J.*, 1920, xxxviii, 21.

For benign tumors of the bladder the author ad-

excision.

Fulguration is effective if the papilloma is truly benign, but as it is so difficult to determine whether it is benign the use of the galvanocautery followed by radium is safer if there is any reason to suspect malignancy.

tedious and painful, and the procedure is followed by early recurrence.

Blood cyst of the ovary with symptoms of ovarian pregnancy J. C. ROSSIGNOLI *Rev argent de obst y gynec*, 1920, IV, 54

The transmissibility of ovarian cysts, particularly dermoid cysts H. KOLTONSKI *Ztschr f Krebsforsch*, 1920, XVII, 408

Krukenburg tumor T. L. CHAPMAN *Surg, Gynec & Obst*, 1920, XXXI, 58

Cystadenoma of the ovary R. ... Roy

Essential tubo-ovarian varicocele A. GHALIER and C. DUNET *Gynec et obst*, 1920, I, 239 [397]

Cystadenomyoma of the fallopian tube L. BORHARN-WETCHAGIT and A. G. ELLIS *Surg, Gynec & Obst*, 1920, XXXI, 77 [398]

Heteroplastic bone formation in the fallopian tube G. ASAMI *Am J M Sc*, 1920, CLV, 107

Embryoma of the ampullar portion of the fallopian tube J. G. AHUMADA *Rev argent de obst y gynec*, 1920, IV, 36

External Genitalia

Rudimentary vagina—a case report P. MARSHALL *Am Med*, 1920, N S XV, 390

A case of congenital fusion of the rectal and the vaginal openings A. M. ARQUELLAO *Med. Ibera*, 1920, XI, 117

Cervicovaginal fistula K. GRAMANN. *Deutsche med. Wchnschr*, 1920, XLVI, 713.

Miscellaneous

Metrorrhagia of appendicular origin G. GIACOBINI. *Chirurgia*, 1920, XXVIII, suppl., 670.

Gonorrhea of the appendix G. GIACOBINI. *Chirurgia*, 1920, XXVIII, suppl., 670.

R. JOLLY.

GELHORN.

S. SPEYER.

Vlaamsche [400]

OBSTETRICS

Pregnancy and Its Complications

Some phases of the circulatory disturbances of pregnancy with an illustrative case. W. W. HERRICK *Med Clin N Am*, 1920, IV, 179 [401]

Diet in pregnancy C. E. PADDOCK *Surg, Gynec & Obst*, 1920, XXXI, 71 [401]

The toxemias of pregnancy E. S. WARING. *Charlotte M J*, 1920, LXXIII, 21

Pernicious vomiting of pregnancy H. M. READ *Hahne-man Month*, 1920, IV, 426

and A. M. KENNEDY *Lancet*, 1920, CXCV, 116 [402]

C. E. H.

pregnant *Gynec*, [402]

et obst, 1920, I, 217

The management of acute appendicitis developing in the latter weeks of pregnancy report of case treated by caesarean section and appendectomy N. P. COCKE and J. M. MASON *J Am M. Ass*, 1920, LXXV, 95

The classical caesarean section as treatment for certain forms of bronchopneumonia in pregnancy. J. TORRE Y BLANCO *Siglo med*, 1920, LXVII, 204 [402]

The treatment of inevitable abortion A. VILLAR *Rev argent de obst y gynec*, 1920, IV, 10 [403]

A case of ruptured interstitial ectopic gestation V. Z. CORE *Proc Roy Soc Med*, Lond, 1920, XIII, Sect. Obst & Gynec, 156

A case of combined antepartum haemorrhage, placenta praevia, and accidental haemorrhage E. HOLLAND *Proc. Roy. Soc Med*, Lond, 1920, XIII, Sect. Obst. & Gynec, 132

Labor and Its Complications

The induction of labor by an unusual method G. L. BROOKEHEAD *J Am M. Ass*, 1920, LXXV, 176

The treatment of obstinate occipitoposterior positions J. B. DELEE. *J Am M. Ass*, 1920, LXXV, 145 [404]

The treatment of the second stage of labor with special reference to the prevention of injury to the child and to the pelvic floor J. B. DELEE *Minnesota Med*, 1920, III, 317 [404]

Two causes of rupture of the vagina during labor. A. C. ... *Proc Roy Soc Med*, Lond, 1920, XIII, Sect. Obst. & Gynec, 132

obst., 1920, I, 113

Puerperium and Its Complications

Non-interference in the treatment of puerperal and postabortal infections E. L. KING *J. Am M. Ass*, 1920, LXXV, 147 [405]

Timberlake, G.: A Simple and Efficient Means of Applying Radium to Bladder Neoplasms in the Male. *J Am M. Ass.*, 1920, lxxv, 309

While working with Young's cystoscopic rongeur the author found that this instrument may be used for the direct application of a radium capsule to intravesical growths. The capsule is held firmly in the jaws of the instrument by a pulley belt hook slipped over the thumb and finger posts. After it has been accurately placed the cystoscope is removed and the obturator introduced in order to prevent leakage.

Regardless of the position of the tumor mass, it can be approached in this way with reasonable accuracy and the dose may be varied with each treatment according to the requirements. The discomfort to the patient is minimized as the time necessary for the application is lessened.

HARAY A. FOWLER.

Lydston, G. F.: Urethral Strictures of Large Caliber, a Much Neglected Field. *Am. Med.*, 1920, n. 5, xv, 312

The author calls attention to a class of cases in which there is a chronic urethral discharge due to stricture of large caliber. This type of stricture is often undiagnosed because it will admit sounds of comparatively large size with little resistance. When a bulbous bougie of smaller size is used, however, a very distinct resistance is felt at the point of narrowing.

Some cases of this sort are permanently cured by dilatation, but in the author's opinion urethrotomy, either external or internal, according to the location of the stricture, is the only measure which can be expected to give lasting results when a fibrous ring is present.

H. L. SANFORD.

GENITAL ORGANS

Kinoshita, M.: The Lipoids of the Prostate (Die Lipide der Prostata). *Ztschr. f. Urol.*, 1920, xiv, 145.

The findings of different investigators regarding the lipoids in the normal prostate vary considerably. Kinoshita examined for fat 85 prostates taken at random, among them the prostate of an infant 19 days old and that of a man 84 years old.

In the prostates of children a lipid granule is to be found in almost every epithelial cell, while in those of boys at the age of puberty the individual glands are increased in size and number and the fat content of the epithelial cells varies. The prostate is fully developed at about the nineteenth year of age. After the twentieth year it contains a greater amount of fat. The maximum is reached at about the thirtieth year and then decreases.

The distribution of fat follows fixed laws. At about the time of puberty the lipoids appear chiefly in the glands of the colliculus and the large efferent ducts. Later they become more widespread, the smaller lipid substances being found in the per-

iphery of the prostate as well as in the central part. After the second half of the fifth decade of life the colliculus contains fewer lipid substances, while the rest of the gland contains more. In the individual cells they are found as a rule at the base, underneath the nucleus. In some cases they fill the entire cell and the cells assume a shorter cubical shape on account of the large number of variously formed granules.

Kinoshita believes that any inflammation which impairs the physiological function of the prostate causes a decrease in its fat content. The increase in the lipoids at puberty and the decrease in old age seem well established. The appearance of the fat follows about the same course as the development of the prostate itself.

In the prostates of oxen, dogs, and smaller animals the lipid content differs materially from that in the human prostate. The lipoids in the human prostate which stain with Sudan III appear to be a physiological product. In this connection the question arises whether they are a secretion of normal cells, assimilated products of cellular activity, or part of an internal secretion. Having weighed all the theories suggested, the author has come to the conclusion that the fat of the prostatic epithelium is not a secretory product but the assimilated substance of cellular activity which perhaps is combined with an internal secretion. This view is held also by Herxheimer.

In addition to the findings mentioned, Kinoshita discovered also in the basal layer of the two-layered epithelium of the prostate single large vacuolated cells containing a substance which stains with Sudan III. These may be subepithelial connective tissue cells which, especially in the normal prostate of the reproductive male, have invaded the epithelium. In Kinoshita's opinion they are of connective tissue origin and have phagocytic power. Here and there, but mostly about the colliculus and the excretory ducts, refractive lipoids, larger than the other lipid bodies, are also to be found. After the age of 40 these increase in size and number and are most abundant in the aged, often appearing in the desquamated, degenerated, and fatty epithelium of the lumen. They are to be found also irregularly distributed in hypertrophied prostates. Heat causes the refraction to disappear, but on cooling it reappears. These refractive bodies are especially abundant in the prostates of dogs and are believed to be related in some manner to reduced, abnormal cellular function.

The article contains a summary of the findings arranged in tabular form and a colored plate showing the microscopic picture. JANSSEN (2).

Bugbee, H. B.: Prostatectomy. *Boston M. & S. J.*, 1920, clxxiii, 41, 80.

Bugbee describes the history of the various methods employed to relieve obstruction due to so-called prostatic hypertrophy, both *per urethram* and by open operation.

Prostatic backache A GOTTLIEB Med Rec, 1920, xcvi, 144

Chronic urethritis and prostatitis dependent upon colon bacillus infection C E VERDIER Md Surgeon, 1920, xlvii, 100

Cases of gonorrhoeal prostatitis treated by intraprostatic injection J J VALENTINE Internat J Surg, 1920, xxvii, 226

Prostatectomy H G BUGBEE Boston M & S J, 1920, clxxiii, 41, 80 [411]

The technique of suprapubic prostatectomy II SCHAEDEL Zentralbl f Chir, 1920, xlvii, 571

The after-care in suprapubic prostatectomy, some new features T L DEAVOR Am J Surg, 1920, xxxv, 181 [412]

C VINSON South

L L STANLEY [412]

Miscellaneous

Urology in practical medicine SCHLANGENTROIT Y CHENER Prog de la clin, Madrid, 1920, vii, 210

SURGERY OF THE EYE AND EAR

Eye

Interesting eye cases A G FORT Internat J Surg, 1920, xxvii, 245

Headache from the standpoint of the ophthalmologist and otolaryngologist E G GILL Med Rec, 1920, xcvi, 11

Gummatous of the eyelid M S MAYOU Proc Roy Soc Med Lond, 1920, xii, Sect Ophth, 67

So

M

Embolism of the central artery of the retina, restoration by forcible massage H V WURDEMAN Am J Ophth, 1920, iii, 573

Gunshot wound in the occipital lobe N B B FLEMING Proc Roy Soc Med, Lond, 1920, xii, Sect Ophth, 39

Tenotomy of the inferior oblique H J HOWARD Arch Ophth, 1920, xlviii, 10

C GOULDEN Proc Roy Soc Med, Lond, 1920, xii, Sect Ophth, 67

Unilateral blindness (war traumatism) followed later by blindness in fellow eye H F HANSELL Am J Ophth, 1920, ii, 511

New growth of the retina N B HARNAN Proc Roy Soc Med, Lond, 1920, xii, Sect Ophth, 42

Cyst of the orbital portion of the lacrimal gland. W H McMULLEN Proc Roy Soc Med, Lond, 1920, viii, Sect Ophth, 64

Elevation of the conjunctiva near the limbus previous to cataract extraction A. WHITMIRE. J Am M Ass, 1920, lxxv, 177

atact

sv, 309

station

J H

PARSONS Proc Roy Soc Med, Lond, 1920, xii, Sect Ophth, 57

Extraction with peripheral iridectomy, endophthalmitis, central iridectomy ("iridotomy") with a hook J H PARSONS Proc Roy Soc Med, Lond, 1920, xii, Sect Ophth, 56

Addition to Lindgren's work. "Fat transplantation into Tenon's capsule after enucleation of the eyeball, and the technique" M HARTELS Koninklijke Akad v Wet, 1920, lxxv, 700

Apparent sympathetic ophthalmia developing nine months after enucleation with implantation of a gold ball into Tenon's capsule D N DENNIS Am J Ophth, 1920, iii, 497

The reactions of the ocular apparatus to syphilis W F HARDY Am J Syph, 1920, iv, 433 [414]

Ear

Surgical problems in otologic work E. R. CARPENTER, Texas State J Med, 1920, xvi, 121

On syringing ears T S WILSON Practitioner, 1920, cv, 70

The responsibility of the physician in the prevention of dull hearing G J PALFN Hahneman Month, 1920, iv, 414

The treatment of dull hearing, the result of affections of the upper respiratory tract J V. F. CLAY. Hahneman Month, 1920, iv, 418

The relation of hypertension and hypotension of the membrana tympani to deafness and tinnitus H. M. HAYS N York M J, 1920, cv, 1067. [414]

The reactions of the ear, nose, and throat in syphilis W E SAUER Am J Syphilis, 1920, iv, 430

Acute suppurative otitis media. A W HOWE J-Lancet, 1920, xl, 366

Acute middle ear infections in children from the standpoint of the otologist T L SAUNDERS. Laryngoscope, 1920, xxx, 361

Misleading conditions in acute suppurative otitis media. J J PARTZEE Colorado Med, 1920, xvii, 180. [414]

That the implantation of testicular material had a stimulating and invigorating effect upon the recipient sexually as well as mentally and physically was evident in all instances.

The implant did not live but became necrotic in a short time. In this process of necrosis, however, it seemed evident that certain unknown substances were released into the system. The glands of rams seemed to be as effective as human glands.

The glands for implantation may be preserved for a week or longer by immersion in vaseline and freezing.

In the operations reported the implant seemed less apt to slough out when placed in the abdomen than when placed in the scrotum. When it was implanted in the abdomen the patient was obliged to remain in bed only one day.

The author claims that any means which increases the physical well-being as this process does tends to increase longevity. CARL R. STEINKE.

MISCELLANEOUS

Chute, A. L.: The Significance of Hæmaturia; A Study of 100 Personal Cases. *Boston M. & S. J.*, 1920, clxxxii, 623

Most of the 100 cases upon which this article is based were consecutive. Cases of hæmaturia due to injury were not included.

To determine the source and cause of the bleeding the use of instruments of precision is necessary in

all but the most simple cases, whether the hæmaturia

will be necessary to determine the cause.

The author's cases included the following conditions: infiltrating growths of the bladder, 32 cases; massive papillomata of the bladder, 11 cases; small papillomata of the bladder, 7 cases; hypernephromata, 8 cases; prostate, benign, 7 cases; prostate, malignant, 6 cases; nephritis, 7 cases; renal tuberculosis, 5 cases; hydronephrosis, 3 cases; stone in kidney, 4 cases; stone in ureter, 3 cases; stone in prostate, 1 case; Banti's disease, 3 cases; polycystic kidney, 1 case; diverticulum of the bladder, 1 case; and papillary cystitis, 1 case.

In 64 per cent of these cases the hæmaturia was due to new growths. Such conditions require immediate care. The various treatments used by the author in cases of bladder tumors are discussed in detail. Cases of ureteral stone he treats conservatively unless the calculus is incarcerated.

In conclusion Chute says. "My opinion is that a study of a considerable number of cases of hæmaturia compels us to conclude that the physician who told his patient that he might safely ignore his bleeding showed poor judgment medically; that although he was partly right, it was luck rather than to

What constitutes good tonsil surgery? J W MAC CONNELL. Charlotte M J., 1920, lxxvii, 18

A plea for more careful tonsil and adenoid operation F BOYD Texas State J Med, 1920, xvi, 131

The status of tonsillectomy in Texas S N KEY. Texas State J Med, 1920, xvi, 130

reference to hemorrhage control G S MCKINLEY Texas State J Med, 1920, xvi, 132

Tonsillectomy in the adult under local anesthesia by the Sluder method R MCKINNEY Laryngoscope, 1920, xxx, 429

vocal cord J D GRANT Proc Roy Soc Med, 1920, xiii, Sect Laryngol, 152

Minute sessile fibroma destroyed by means of the galvanocautery J D GRANT Proc Roy Soc Med, Lond, 1920, xiii, Sect Laryngol, 152

Small globular fibroma causing extreme hoarseness in a voice user J D GRANT Proc Roy Soc Med, Lond, 1920, xiii, Sect Laryngol, 152

Fibroma of the right vocal cord in an exceptionally intolerant subject J D GRANT Proc Roy Soc Med, Lond, 1920, xiii, Sect Laryngol, 152

of the vocal cord for intrinsic cancer of the larynx, and the chief vessel concerned, and its control I MOORE Proc Roy Soc Med, Lond, 1920, xiii, Sect Laryngol, 132

Tuberculomata of the larynx J A PRATT Ann Otol, Rhinol & Laryngol, 1920, xxix, 401

Laryngol, 148

The treatment of cicatricial web stenosis of the larynx and trachea. H L LYMAN Laryngoscope, 1920, xxx, 343

Suspension laryngoscopy as a means of diagnostic and operative approach to the larynx R C LYNCH Ann Otol, Rhinol & Laryngol, 1920, xxix, 417

Experience with Gluck's method of laryngectomy R BOTEY Rev españ de med. y cirug, 1920, lxi, 65

Direct laryngoscopy S A. FRIEDBERG Ann. Otol, Rhinol & Laryngol, 1920, xxix, 410

Mouth

The need for closer relationship and co-operation between dentists and surgeons in the treatment of oral diseases

Infected apices of teeth and pyorrhea alveolaris, their dental and systemic relation, A WESTLAKE. Med. Rec, 1920, xcvi, 52

Remote manifestations of focal dental infections, with case reports, R FERNANDEZ Internat. J Orthodont. & Oral Surg, 1920, vi, 446

A further note on the etiology of ranula. R. M. LEWIS. Surg, Gynec & Obst, 1920, xxx, 82

Paradental cysts of the superior maxilla. M. P. JACQUES. Med Press, 1920, n s cx, 9

Vincent's stomatitis and associated manifestations, a report of 175 cases of Vincent's stomatitis and 153 cases of pyorrhea alveolaris. A G BUEHLER. Dental Cosmos, 1920, lxx, 847

namely, pain, fever, malaise, coryza, and general aches and pains. The upper part of the drum is red and bulging from the beginning. Perforation occurs early with a thin hemorrhagic discharge and complete relief of pain. The posterior meatal wall is red and swollen. The discharge becomes profuse the second or third day. After perforation, there is no pain, fever, or malaise, or even mastoid tenderness. Operation performed when the findings mentioned were noted always revealed soft red bone with cavities filled with pus. Hemolytic streptococci were found in all instances.

The patients observed by the author were divided into three groups. In Class A were patients seen late in the course of the disease with complications found at operation. Class B included patients seen shortly after the onset of the condition and operated on before the onset of complications. Class C was made up of patients seen from the onset in whom complications were prevented.

Emphasis is laid on the importance of the only sign constantly present; that is, the redness and swelling of the upper drum and posterosuperior meatal wall and continuance or increase of the aural discharge. If the patients in Class C had not been operated on at the onset they would have run the risk of following the same course as those in Class A.

W. H. GREENFIELD.

Chavanne, F.: Rupture of the Tympanum from Shell Explosions. *Laryngoscope*, 1920, xxx, 441.

Rupture of the tympanum from shell explosions or detonations is frequently complicated by acute purulent otitis media. This condition is dependent upon the size of the rupture, unfavorable conditions of cold and humidity, the presence of concomitant nasopharyngeal infection, and external infection. The author reports 543 personal cases.

Tympanic ruptures may be very extensive. In form they are usually more or less circular or linear. Linear ruptures occurred in more than one-half of the author's cases (337). There were 11

instances of punctiform rupture and 7 of almost complete rupture.

In 258 cases the rupture occurred below and in front, in a position corresponding to that of the figure seven on the face of a clock. In almost all of the cases linear rupture was vertical in direction or

in only 1 instance.

by acute purulent without the development of any other complication. The author has seen only 11 cases complicated by mastoiditis.

Thirty-five of the author's acute purulent cases became chronic.

SPENCER S. HOWE.

Atkinson, D. T.: Modern Technique of the Tympanomastoid Operation. *Internal J Surg.*, 1920, xxxii, 211.

Atkinson describes the steps in the technique of the radical mastoid operation as follows:

1. An incision is made through the skin and periosteum, extending from below upward.

2. The edges of the wound are retracted and the periosteum is elevated.

3. The antrum is opened with a chisel and curette and then entirely rimmed out with the curette and freed from all necrosed bone, cholesteatoma, granulations, polypi, or debris.

4. The mastoid cells are completely obliterated with the gouge, curette, and rongeur forceps.

5. The covering of the aditus ad antrum is removed, preferably with the Kerrison forceps.

6. The posterior wall of the meatus is lowered.

7. The malleus and incus are removed and the tympanic cavity is freed from all inspissated pus, granulations, or necrosed bone by means of a curette.

8. The wound is irrigated and cleansed.

9. Flaps are made by Pause's technique.

10. Skin grafts may or may not be used.

11. The wound is dressed with gauze strips which are allowed to remain in place for four or five days.

The postauricular wound is not closed at the time of the primary operation. OTTO M. ROTT.

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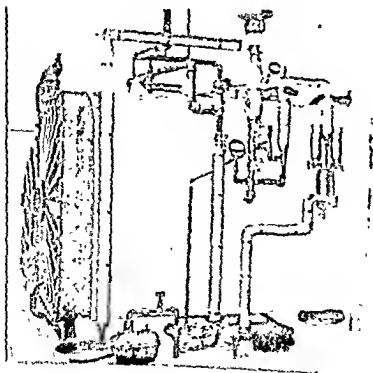
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which may be termed an idiosyncrasy is noted in the fact that the drug enters the circulation so rapidly that death occurs almost immediately.

8. A further study of the toxicity of the local anesthetics will establish the causes of death.

9. Local anesthesia is undoubtedly the choice of all American rhinologists for operations on the nose.

10. It is the choice also of a very large proportion of American laryngologists for throat operations.

11. A small number of surgeons believe that tonsil operations in particular are best performed under general anesthesia.

12. The dangers of hemorrhage during tonsil operations under local anesthesia are no greater than those under general anesthesia.

13. There is no greater danger from postoperative hemorrhage under local than under general anesthesia.

14. The previous administration of morphine requires further investigation.

The conclusions drawn from the investigations are that:

1. Local anesthesia is the ideal method in operations for affections of the nose and throat

2. None of the dangers that have been mentioned is any greater than those following general anesthesia.

The authors make the following recommendations:

1. The formation of a permanent committee on toxicity following local anesthesia.

2. Clinical investigation of new local anesthetics by clinicians of our own choosing as soon as the pharmacologist has made his investigation.

3. The use of soluble tablets of cocaine to make fresh quantities of the solution as required, one tablet to be dissolved by the operator in hot sterile water. Each 240 minims of this solution should make a 0.5 per cent solution. The unnecessary deaths which are ascribed to the mistake of the druggist or the nurse would thus be avoided.

OTTO M. RORR.

Gording, R.: Serious Complications in the Puncture of the Maxillary Antrum; Investigations, by Experiments on Animals, of the Reflexes Produced from the Mucous Membrane of the Antrum; Air Emboli after Antrum Puncture. *Ann. Otol., Rhinol. & Laryngol.*, 1920, xvii, 293.

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wh

ated with serious complications, the author discusses the various factors responsible for such complications.

Cocaine poisoning may be a predisposing cause but scarcely the decisive factor. Two other possible factors are a reflex of unknown nature from the

mucous membrane of the antrum or the production of an air embolus during the operation. Regarding these possibilities Gording reaches the following conclusions:

1. While it cannot be denied that reflex irritation phenomena may occur in sensitive persons, such phenomena are rare.

2. Air emboli may arise from the loosening of the membrane lining the antrum and the injection of air between the bony wall and the membrane. This, of course, is not true in all cases and in many no satisfactory explanation can be offered.

The author sums up his observations as follows:

1. Serious symptoms are rare but are fraught with the greatest danger to life.

2. There are two factors which should be taken into consideration in puncture of the antrum: (1) the narrow stenosed ostium maxillare, and (2) the thick, firm antral wall.

3. If the ostium maxillare, notwithstanding the usual cocamization, is stenosed so that the advance of the air through the ostium is impeded, the opening in the lower meatus, especially in the more acute sinusitis with tenderness of the mucous membrane, should be made sufficiently large for the air and water to pass through it without too greatly increasing the pressure in the antrum.

4. If the wall of the lower meatus is thick and offers such resistance to the insertion of the trocar that the needle is able to penetrate the bony wall only very gradually, it would perhaps be safest to withdraw the needle and choose the way through the middle meatus. If for some reason it is nevertheless considered desirable to use the trocar through the lower meatus, the utmost caution must be exercised, as under these conditions it is impossible to be certain that the mucous membrane has not been loosened. In such cases it might be better not to give an injection of air, but to endeavor to make the diagnosis by aspiration if a large opening is not made at once.

OTTO M. RORR.

Skiffern, R. H.: A New or Hitherto Undescribed Form of Maxillary Sinusitis. *Ann. Otol. Rhinol. & Laryngol.*, 1920, xxix, 437.

In the case reported the chief complaint was of a postnasal discharge of liver-like clots of blood. There were no signs or symptoms of inflammation, and no pus was discovered. When the antrum was washed out an ounce or more of apparently pure unclotted blood escaped but no pus. Bacteriological examination of the blood revealed large numbers of hemolytic streptococci. Following daily irrigation the discharge began to assume a purulent type, but reverted to the hemorrhagic type when treatment was discontinued.

OTTO M. RORR.

Sullivan, J. J., Jr.: Conservative Operation of the Nasal Accessory Sinuses. *Pennsylvania M. J.*, 1920, xlii, 581.

A diagnosis of sinusitis should not be based merely upon the presence of pus in the nose nor should it

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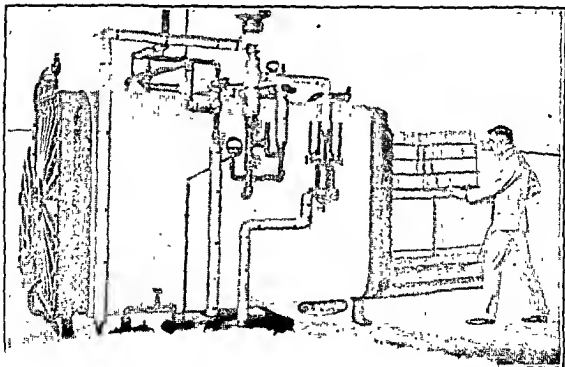
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Davies, B. G.: A New Tonsillectomy Technique. *Ann. Otol., Rhinol. & Laryngol.*, 1920, xiv, 306.

In performing a tonsillectomy the author uses a pair of Seiler's turbinal scissors, the backs of the blades of which have been beveled to a semisharp condition so as to produce a more than dull dissec-

so that the points with the blades closed pass between the pillar and the capsule at their juncture in the upper third. In this position the points are passed outward to the base of the tonsil, no force being necessary, and then opened about $\frac{3}{8}$ in. From this position, the lower blade being fixed, the upper blade is made to travel over the top of the tonsil, describing an arc which extends down one-third of the posterior pillar. The scissors are then closed and held in position and the lower blade is moved downward while the upper blade is fixed. The operation is completed with the use of the snare

OTTO M. RORI.

Thomson, S.: Intrinsic Cancer of the Larynx, Impaired Mobility of the Affected Cord in Diagnosis and Prognosis: Observations Based on 44 Cases Treated by Laryngofissure. *Lancet*, 1920, xcix, 183

Interference with the movement of a vocal cord as a symptom in certain cases of cancer of the larynx was first noted by Lublinski and Semon at about the same date. Semon in his earlier observations sug-

diagnosis of cancer was not justified if there was free movement of the cord and the microscopic examination of the growth was negative. As a consequence the results in these cases were disastrous because an early opportunity for operation was lost. After twenty-one years of further experience, however, Semon corrected his former misconception and formulated the rule. "If the vocal cord from which a suspected laryngeal growth springs shows at an early period of the disease a defect of mobility other than that due to mechanical impaction of the growth in the glottis on phonation, this sign is almost pathognomonic for the malignant character of the tumor. If, however, this sign should yet be absent when the case comes under observation, such negative evidence does by no means exclude possible malignancy."

Mechanical interference with the excursions of the affected cord due to projection of the growth into the glottis is not considered as impairing intrinsic mobility. Of the 44 cases analyzed the affected cord was quite mobile in 27. In the remaining 17 cases its movements were more or less impaired, the degree varying from mere sluggishness to complete fixation. In 3 of the latter cases the defect in movement developed while the patients were under observation. In only 10 cases was it possible to remove a satisfactory portion of the growth for microscopic examination. It is noteworthy that the cord moved freely in no less than 8 of these 10 cases. This shows that impaired mobility is a valuable diagnostic aid as it is more apt to occur in cases in which a satisfactory piece of growth cannot be obtained for microscopic examination. When the growth is embedded or tends to penetrate the cord it is more apt to produce paresis than when it is projecting or semi-pedunculated.

Of the 27 patients with mobile cord, 21 are alive and free from local recurrence while of the 17 with impaired mobility only 7 are alive and free from local recurrence. It is evident that the prognosis is decidedly less favorable with regard to the ultimate result of a laryngofissure if the cord is parietic or fixed.

In conclusion Thomson states that impaired mobility of a cord is not a necessary or frequent symptom of intrinsic cancer of the larynx and in fact is found in only a minority of the cases. Impaired mobility is more apt to be met with in an early stage of cancer when the growth is embedded or growing into the cord than when it is a sessile or even a pedunculated tumor. It is also more usual when the growth is situated on the inner surface or subglottic area than on the upper surface of the cord. Otherwise fixation indicates an advanced case. When present, it is a very valuable symptom differentiating a malignant from a benign tumor. It is of little value and may even be misleading in

delay, we may have to rely on inspection, the age, sex, history, and progress of the case, and exclusion of other possibilities. The help of microscopic examination of a removed portion is available only in a small number of cases (10 of 44). As regards prognosis it is an unfavorable symptom."

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SURGERY OF THE HEAD AND NECK

Head

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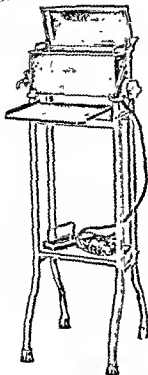
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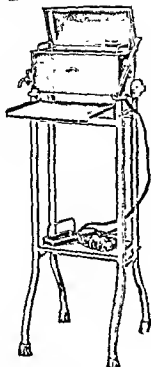
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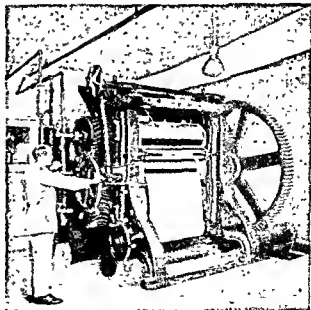
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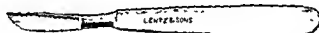
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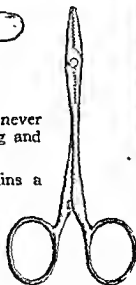
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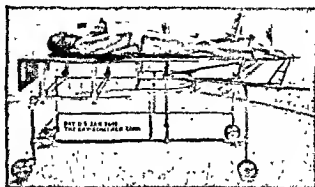
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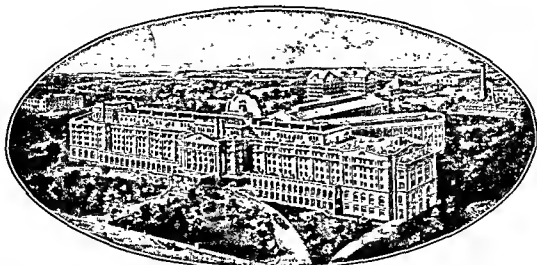
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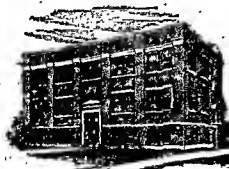
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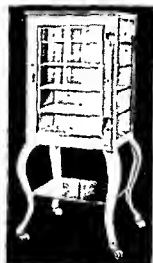
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360..	Horsehair.	Four 28-inch Sutures ..	00
390..	Plain Silkworm Gut....	Four 14-inch Sutures ..	00, 0, 1
400 ..	Black Silkworm Gut.	Four 14-inch Sutures ..	00, 0, 1
450 ..	White Twisted Silk.	60 Inches ..	000, 00, 0, 1, 2, 3
460 ..	Black Twisted Silk....	60 Inches ..	000, 0, 2
480..	White Braided Silk.	60 Inches ..	00, 0, 2, 4
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812...	10-Day Chromic Catgut.	20 Inches.....	00, 0, 1, 2, 3
822...	20-Day Chromic Catgut	20 Inches.....	00, 0, 1, 2, 3
862..	Horsehair	Two 28-inch Sutures.....	00
872..	Plain Silkworm Gut.....	Two 14-inch Sutures ..	0
882..	White Twisted Silk	20 Inches.....	000, 0, 2
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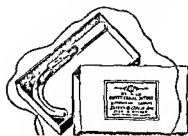
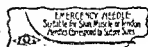
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Product No.	Material	Approximate Quantity in Each Tube	Catgut Size
974...	Plain Silkworm Cut	Two 14-inch Sutures.....	0
984...	White Twisted Silk.....	14 Inches.....	000, 0, 2

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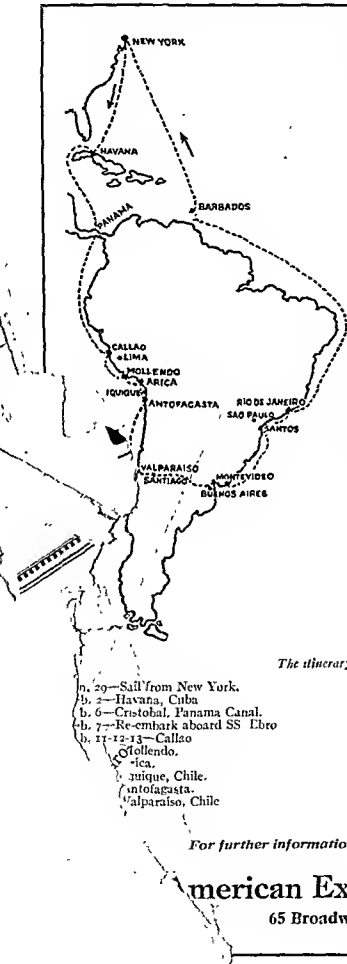
Jan. 29—Sail from New York.
Feb. 2—Havana, Cuba.
Feb. 6—Cristobal, Panama Canal.
Feb. 7—Re-embark aboard SS Ebro.
Feb. 11-12-13—Callao, Ocallendo, Ica, Iquique, Chile.
Feb. 14—Antofagasta.
Feb. 15—Valparaiso, Chile.

Feb. 22—Santiago.
Feb. 23—Los Andes.
Feb. 24—Mar. 5—Buenos Aires, Argentina.
Mar. 6—Montevideo.
Mar. 11—Santos, Brazil.
Mar. 12-14—Sao Paulo.
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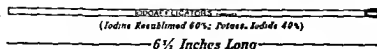
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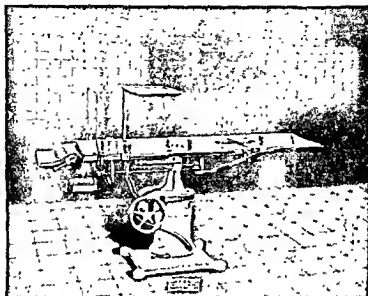
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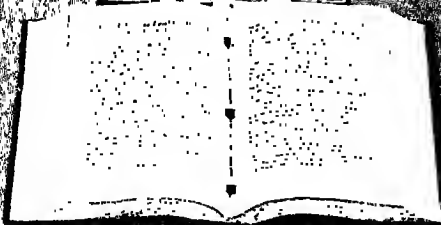
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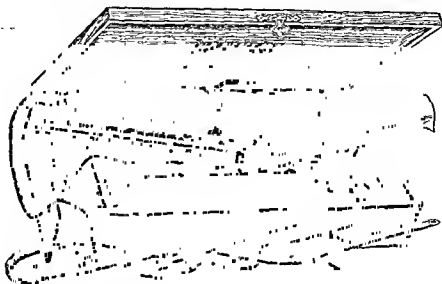
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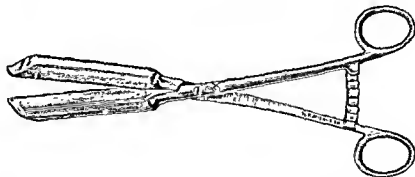
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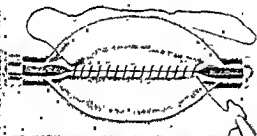
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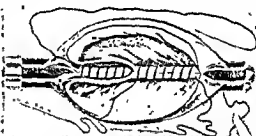
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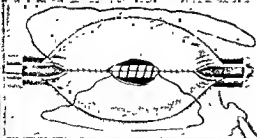
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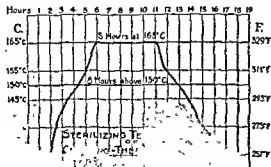
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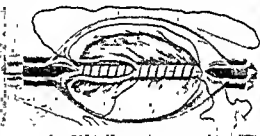
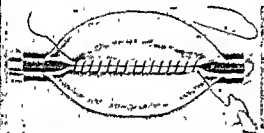
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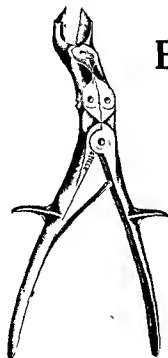
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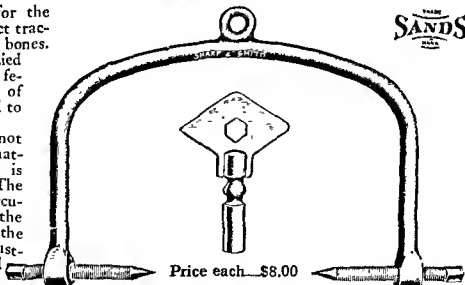
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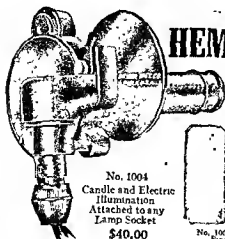
Illustrations representing experiments of different kinds of primitive trephining with tools used (Lancet)

in the first row, and the other benches packed to the roof with eager students, or with medical men, who came again and again to learn from him afresh. As he began to speak one felt a strange sense of disappointment, and even of dismay. For while the handsome face and upright figure were things of real beauty, the voice in which he began to speak was quite unpleasant. It was harsh, even raucous, high pitched, shrill, apt to wander into other keys. It seemed strange that a man of Irish descent, and of so gracious and commanding a presence, should have a voice so lacking in softness, one which not only did not appeal, but actually displeased and almost repelled every listener. But as he continued speaking the voice gradually ceased to distract, it became smoother, quieter, and more evenly pitched, and all thought of it was now lost in rapt attention to the matter. For

things were happening even while one's first emotions were roused. Questions were being asked, and answered, often with great rapidity, then would come a pause, in which with marvellous directness and power the lesson to be learned therefrom was driven home. The rally began again. A poor answer came, or an assistant, responsible for the clinical notes, had omitted to inquire upon some relevant point; raillery came in torrents, never ill-natured, never rancorous, but with just sufficient sting to leave a memory which would stimulate all future work. The discussion warmed imperceptibly; gradually the coherent chain of argument lengthened, as link after link, forged under our eyes, newly appeared; slowly there came a sense of excitement; of impending revelation; all inquiry, all disclosure, all argument, was leading up to something that we now ached to learn. Old observations and ancient truths were taking on a new complexion; relations hitherto unsuspected were here declared and explained. The whole intellectual mechanism underlying a great subject was being shown both in detail, and in all the majesty of many moving parts. Perhaps as we drew near to the end, when the whole story would be laid bare, a question barked at one of his audience would fail to be answered. With voice more clamorous,

others. Hearts beat faster, the spiritual anguish could hardly be borne. At last the answer would come, and after a final swift induction or brief summary; when the clinical journey was over, we sank back in happiness and mental repletion to wonder, if Stevenson could really have been right when he said, "It is a better thing to travel hopefully than to arrive," for this journey had been happy, though anxious enough, but the haven was a rest of tranquility, and wonder, and content.

And then Murphy would operate. Now of operators there are many types, and like every other work of art, an operation is the expression of a man's temperament and character. There are still among us "brilliant" operators, from whom I pray to be spared



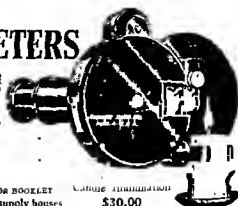
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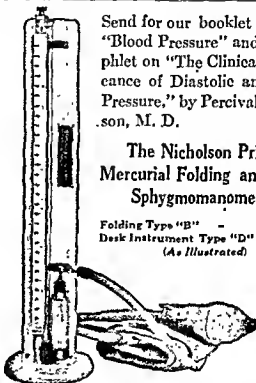
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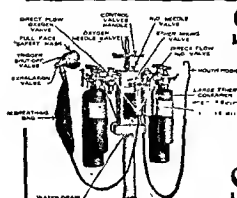


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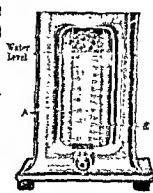
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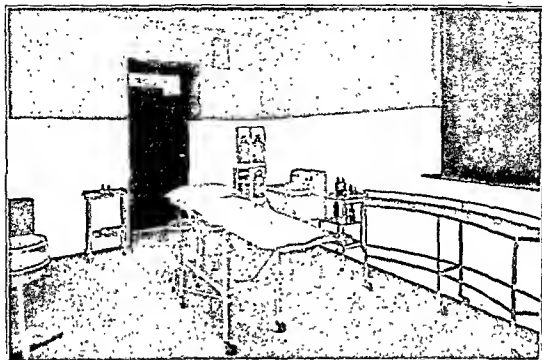
to hear him. His audience, or so it always seemed to me, were often held back from quick appreciation. He was not like other men instantly attractive as an orator. Yet, as he developed his argument; little by little and step by step, the audience warmed to him, he interested them, he intrigued them, he dominated them, he fired them, intellectually he roused them to breathless interest, emotionally they were at times at the limit of self-control. No one could bear to miss a word, and while Murphy spoke no man left his seat. For his meaning was conveyed in pellucid language and though he might speak with the vehemence of raging conviction his thought was never obscured in a smoke of words. Such an intellectual lode stone was he that appointments were missed and hunger and thirst and fatigue were forgotten. For

while Murphy expounded his gospel everything else seemed to fade in importance overshadowed by the lessons which were now being learned so eagerly.

I often wondered, as I listened, in what degree he resembled Lincoln. The tall, gaunt frame, and the harsh and meagre and strident voice were the same. Murphy must have been one of the handsomest men of the day; Lincoln's features were haggard, plain and homely, but his deep and glowing, sad and tender eyes no man could forget. Murphy had no such command of language as Lincoln, certainly one of the greatest orators who has ever spoken our language. But in effect they must have been alike. For they made everything else seem commonplace when they spoke, and they seemed to be delivering a message charged with truth and pregnant with confidence and hope. Lord Charnwood in his most excellent work on "Abraham

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countries some of his glow, his fervor, his complete devotion, or the full meaning of his gospel. For this great omission there were perhaps some compensations. There were few clinics in any part of the world in which something taught by Murphy or inspired by him, had not crept in and found a home. His name was often on the lips of surgeons in all lands. His views impressed themselves on men's minds. His methods were closely copied. But when Murphy laid his mantle down there was no one ready and worthy to take it up. When we remember how the pupils of Turner, of Edinburgh, became professors in most of the chairs of anatomy throughout the British Empire, how many men Billroth trained to occupy with great distinction the chairs of surgery in eastern Europe, how Welch is the happy parent of a great school of pathologists trained by him, inspired by him, and looking to him with reverent affection, we cannot refrain from regret that some of the acolytes of Murphy did not grow to the stature of high priests.

Year by year Murphy grew in intellectual power and in the dominion he exercised over the minds of men. A problem took on a different aspect if Murphy were engaged in it. He touched the common currency of surgical thought and changed it into gold. For no effort of his was meaningless or sterile and all

the powers of his mind and of his frail body were spent ungrudgingly in all his work. His well stocked library, and all new literature were searched for him, and dispatches made for his assimilation. He worked as all great men should work, with a clean desk. His great powers were used for worthy purposes and in due season, nothing was wasted in mere hack work, for all that could be equally well done by others was left for them to do. Yet all his life he overworked. He had an inner restless spirit, which drove him at full speed. He must work, and while at work there was only one speed, the highest he could command. "I do not wish to linger after my work is done" he said, and it was exactly what might have been expected from him.

It is useless to wish that men possessed of his qualities and capacities should use themselves differently. A man must do as he must do. If we think that Murphy by spending himself with less lavish extravagance might have prolonged his life another ten years and so have achieved even greater results, to the benefit of all mankind, we are pondering over one who was not Murphy, and who could not in those early fruitful years have been so avaricious for work, or have so generously poured forth the new truths of which he was at once both parent and missionary. Our designs for another

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It is evident that by the time of Celsus the boundaries of surgery had been sensibly enlarged, that old procedures had been bettered, as in amputations, and that many new ones had been devised. But progress had been along the old lines, and was achieved by the old methods. He recorded the multiplication and the magnification of old experiences rather than the revelation of new discoveries. He it was who gave us the fulfillment of the promise of the Hippocratic methods.

But great as were these methods, and considerable as was the success attending their application, there had been a slumber of the intellectual and philosophical aspects of medicine. Hippocrates had united in his own person many divergent and opposing tendencies; after his death there was an acceptance of the teaching by various sects, each adopting a part only, and dogmatism with its cramping tendencies crept in and the spirit of investigation died away. There was need now of a philosopher with new vision and the need was supplied in Galen. Of Galen's life and character we know much, for he was vain and ambitious, garrulous and verbose. He was trained and deeply versed in all the current philosophies. A dream of his father, Nikon, interpreted as a vision from the God of Medicine, decided his choice of a profession. After the death of his father he wandered for 9 years studying in Corinth, Smyrna, and especially Alexandria, which then attracted commerce and patients from all parts of the world. His opportunities were great and his use of them unwearying. He wrote

works on anatomical and physiological matters, and attained even in these early years of his a reputation for wisdom and sagacity. For four years he lived in Rome. His learn-

ing was not without its cost. He had a great fear of his life, to return on the invitation of Marcus Aurelius some 12 years later. But Galen's chief claim to honor, an imperishable one, is that he was the first of physicians to bring experiment to the aid of medicine. As Hippocrates was the parent of inductive method, so was Galen of the deductive. He was the first experimental physiologist. It was he who first discovered and described the cranial nerves, and the sympathetic nervous system: he divided the spinal cord and produced paraplegia; he severed the recurrent laryngeal nerve, and produced the hoarseness and aphonia, which are the constant results of this injury. He discovered the function of a muscle by studying the loss of power which followed its division. He demonstrated the flow of urine from the kidney to the bladder along the ureters, by a series of experiments than which nothing today could be more conclusive. And he trembled at the very edge of a great discovery when he wrote: "If you would kill an animal by cutting through a number of its large arteries you will find the veins becoming empty along with the arteries; now this could never occur if there were not anastomoses between them." Unhappily experiment alone did not content him, nor experiment in close alliance with clinical observation. His knowledge of anatomy, unsurpassed by any of his time, did not keep him aloof from the wildest speculations, in natural philosophy. It is interesting to learn from him that the art of dissection was mainly, if not wholly, confined to certain families, among whom tradition and instruction gave rise to a caste of dissectors. The members of a family were, from their childhood, exercised by their parents in dissecting, just as familiarly as in writing and reading, so that "there was no more fear of their forgetting their anatomy, than of forgetting their alphabet."

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Elizabeth and the father of modern experimental science, and practiced with such supreme effect by Harvey, was to find as yet no place in scientific surgery. That art it is true was practiced with wider scope, with confidence bred of generations of experience, and with a risk that was perhaps steadily though almost negligibly diminishing. Safety was rather dependent upon the individual capacity of the surgeon than a quality common to the work of all. Richard Wiseman, who was born 3 years after the publication of Harvey's discovery, is generally granted the proud title of the father of English surgery. He was a man "given to the observation of Nature" and became Sergeant Surgeon to Charles II and to James II (who when Prince of Wales and Duke of York were withdrawn under a hedge October 23, 1642, during the battle of Edgehill, when Harvey distracted their thoughts by reading to them) and among his contributions to the craft of surgery may be mentioned his operations for hernia, and his advocacy of primary amputation in cases of injury, by gunshot or otherwise, of the limbs. Ambrose Paré was to French surgery what Wiseman was to British. The life of Paré is one of the greatest romances in the history of our profession, it tells the story of the progress of the son of a joiner who was groom, gardener, barber's apprentice, until he became at last the surgeon to four kings of France. It was he who was concealed, locked up in a room of the Louvre, and spared from death by special order of Charles IX at the Massacre of the Huguenots on the day of St. Bartholomew. For the King said that it was not reasonable that a man who was worth a whole world of men should be murdered. He is the outstanding medical figure in the Renaissance. He was untaught and therefore in youth at least free from the trammels of ancient lore. Early in life he said: "I make no claim to have read Galen either in Greek or in Latin: for it did not please God to be so gracious to my youth that it should be instructed either in the one tongue or in the other." When at last he read Hippocrates and Galen he surpassed them both in the number and variety of the conditions he had been called upon to treat;

and he was therefore the better fitted to approach their teaching in the spirit of an informed and practiced critic. "We must not be drugged by the work of the ancients as if they had known all things or spoken all," he writes. Yet in later years he studied diligently for he was said by Thomas Johnson, who translated and edited his works, to be "a man very well versed in the writings of the ancient and modern physicians and surgeons." He was one of the greatest original minds our art has known, fearless, independent, alert, and inventive and not without a good conceit. "There be few men of this profession" he writes, "which can bring so much authority to their writings either with reason or experience as I can," and again, "I have so certainly touched the mark whereat I aimed, that antiquity may seem to have nothing wherein it may exceed us beside the glory." but a

as it is
He won for surgery and for those who practiced the craft in France a place they had never before attained.

Surgery was still lacking its firm foundation in pathological anatomy. This was to be built by Morgagni and John Hunter and by many others taught and inspired by them. The tireless industry, unwearying care, and profound sagacity of John Hunter, gave to an

collector, in each capacity without a rival. He was unceasing in his search for truth by way of experiment. "Don't think, try the experiment," he urged his pupil Jenner. In his own person he did both, supremely well. His disregard of the written word was deplorable no doubt: but refreshing after so much barren speculation among his fore-runners. "I am not a reader of books," he said; and again, "I believe nothing I have not seen and observed myself." His rebuff to one who accused him of ignorance of the classics is famous. "Jesse Foot accuses me of not understanding the dead languages: but I could teach him that on the dead body which he never knew in any language, dead

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Limbs were amputated when smashed or so diseased as to be worthless and dangerous; the mortality from amputations varied from 40 to 50 per cent. In Lister's hands, up to the year 1865, in 15 cases of excision of the wrist-joint by his own method, 6 patients suffered from hospital gangrene and 1 died from pyæmia. Volkmann, one of the earliest of Lister's disciples, had results so ghastly that he decided to close his hospital altogether for some months. Lister's own account of his wards at Glasgow is disturbing and distressing even today. The most vigorous and robust patients were swept away after the most trifling injuries or operations, and septic diseases were so frequent and so deadly that the very name of hospital was dreaded by every sufferer. John Bell, a great surgeon, spoke of the hospital as a "house of death."

In the paper which Lister had read, Pasteur asserted that "the most far reaching of my researches is simple enough, it is that putrefaction is produced by living ferments." He asserted that the oxygen of the air was not the cause of putrefaction, as everyone hitherto had supposed; that indeed some of the causes of decomposition could thrive only in the absence of oxygen. This observation which distinguishes "aerobic" from "anaerobic" organisms is of the first importance. Lister at once realized the significance of this work in connection with the changes occurring in wound discharges and on wound surfaces. In 1867, he wrote: "When it had been shown by the researches of Pasteur that the septic property of the atmosphere depended, not on the oxygen or any gaseous constituent, but on minute organisms suspended in it, which owed their energy to their vitality, it occurred to me that decomposition in the injured part might be avoided, without excluding the air, by applying as a dressing some material capable of destroying the life of the floating particles." He proceeded to make trial of the hypothesis in his own work. At this time he had heard also of the experiments made at Carlisle with the disinfection and deodorization of sewage by German creosote, a crude form of carbolic acid. The administration of a very small proportion of this substance not only prevented all

odor from the lands irrigated, but destroyed the entozoa which usually infest cattle fed upon such pastures. This was the preparation he decided, after trying chloride of zinc and the sulphites, to rely upon in his early trials.

Among surgical cases then, as now, the sharpest distinction was drawn between simple and compound fractures; between fractures, that is, where the soft parts are almost unhurt, and the skin unwounded, and fractures in which a wound through the skin and soft tissues reaches the broken ends of bone. In simple fractures, life was rarely or never in jeopardy; in compound fractures, putrefaction of wound discharges occurred, septic processes became rampant and the mortality was high. "The frequency of disastrous consequences in compound fractures, contrasted with the complete immunity from danger to life or limb in simple fracture, is one of the most striking as well as melancholy facts in surgical practice." These were the opening words of Lister's first paper on the "new methods" in the *Lancet*, in 1867. The first trial of this method proved disastrous owing to improper management, but the second attempt on August 12, 1865, proved perfectly satisfactory, and was followed by others which more than realized Lister's most sanguine expectations. Compound fractures healed and united as easily and quickly, and almost as safely, as simple fractures. The method proved by so stern a trial was soon applied to cases of chronic abscess, and by degree to operation wounds. In one of his earlier papers Lister wrote: "Admitting then the truth of the germ theory and proceeding in accordance with it, we must, when dealing with any case, destroy in the first instance once for all any septic organisms which may exist within the parts concerned; and after this is done, our efforts must be directed to the prevention of the entrance of others into it." This statement shows that Lister laid down the two essential principles of antiseptic system, the prophylactic and the therapeutic.

Lister's work, it is evident, was the result of research carried out both by the inductive and by the deductive method, and tested and confirmed by many experiments. He



William Harvey

is guided by the principles of diagnosis discovered by the surgeon and the radiographer he will stray wide from the path of truth. So, too, of duodenal ulcer, our present knowledge of which is due entirely to the clinical research made possible by safe surgery. And the list might be greatly extended. Much more remains to be done. We are only on the threshold of our inquiries as to the complementary action of one organ upon another; of the relations, for example, of the pancreas, spleen, and liver to each other; and of all, or any, of these, to parts, or to the whole, of the alimentary canal, and to the organs possessed only of an internal secretion. Clinical research involves and implies the fullest inquiry into the detailed character of all present symptoms; the most searching pursuit after those

earliest departures from smooth and normal action which observation can discover, the correlation of all these with the manifest changes observed at all stages in the several organs during operations upon any of them. When all this knowledge has slowly and patiently been garnered, then the method of experiment must be used to carry our inquiries still further, and to help us to answer the question: "How do these things happen?" Clinical research will tell us of the changes in other organs associated with the one to which our main inquiry is directed, but a process of deduction and an inquiry by experiment are necessary before we can disclose the sequence of events which culminate at last in the disease we set out to study. The clinical research is beyond question the more arduous. The factors which enter into it are so many, so variable, so impressed by the changing conditions and moods and circumstances of the patient that only the most indefatigable patience and the most trained capacity can help to resolve the matter into simple terms, to dissociate what may be an infinitely complex grouping of many facts before we can rearrange them in appropriate sequence of process or of time. We must discover the "usual conditions," obtain our general notions, observe carefully a multitude of facts, arrange them in orderly fashion, employ the mental act which will bring them together as elements in a great truth. When this is done, and only when this is done, can the deductive method of Galen be employed to fullest advantage. Experimental research is not so baffling a task. Great ingenuity in the devising of experiments may be found in the supreme masters, Pawlow, Almroth Wright, and a very few others. But each experiment often contains only the one question to which the answer is sought. The answer is "yes" or "no," or is expressed in simple terms and it is free from those infinite perplexities, and changing proportions which distinguish the answer given to any inquiry, even the simplest, in the method of clinical research. When in a simple experiment the answer is given a new problem may arise suggesting a further experiment. Thus a chain of experiments may develop, each of

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JOHN B. MURPHY—SURGEON¹

BY SIR HERKELEY MOYNIHAN, K.C.M.G., C.B., L.D.S., ENGLAND

"The moral of the whole story is this: that we should do all that we can to partake of Virtue and Wisdom in this life."

—Socrates is speaking.

THIS is a day of remembrance. We have come together to do honor to one of the founders of this College, a great surgeon whose loss we mourn. You have laid upon me the duty and the high privilege of offering in your name and in my own, and if I may for the moment assume a wider responsibility, in the name of all the surgeons of his time, a tribute to the illustrious memory of Dr. J. B. Murphy.

John Benjamin Murphy was an arresting personality. Even after the briefest intercourse with him there were few people who did not realize that he possessed a curious and subtle power of impressing a sense of his character upon them. His very handsome face, his tall, spare, almost gaunt figure, his high pitched and vibrant voice, his burning and quenchless enthusiasm for life in all its manifold activities, his power of complete self-expression, all clamored for notice, and caught and held the most eager attention. His outlook was grave and serious; he seemed always in earnest. The little quips and sallies, the friendly taunts, the provocations to repartee, the illuminating anecdote, which in the United States distinguish the cordial intimacies of daily life, did not seem to play around him as freely as around other men. Even in a crowded room of busy men, or

when a debate was keen he would steal a few moments for a whispered conversation, held aloof, on some topic that for the moment filled his thoughts. Among those who knew him well he was admired and deeply respected, rather than loved. Except to a very few he was not genial or responsive in friendship. His intellectual attainments were so considerable, and his position in the judgment of his contemporaries so secure, that jealousy hardly touched him, except perhaps in his earlier years and from a few among his seniors whose supremacy he challenged. Such jealousy is perhaps the tribute paid to youth for successful enterprise in thought or in action by minds which suffer from the atheroma of advancing years. We are reminded of the aphorism of Sir Walter Raleigh

*"For whoso reaps renown above the rest
With heaps of hate shall surely be oppress."*

Murphy was beyond question the greatest clinical teacher of his day. No one who listened to him can ever forget the experience. Before his audience arrived he had everything very carefully prepared, diagrams in order, microscopes ready, the patients examined and all relevant literature at his finger ends. There he stood in the middle of the circle, in the theatre, with his assistants and friends

¹ The first Murphy memorial oration delivered before the American College of Surgeons, Montreal, October 11, 1920.



Richard Wiseman From a miniature in possession of the Duke of Rutland

wealth of care and inexhaustible patience. The gross lesions of morbid anatomy, and even many that were recondite and remote, were examined, described, discussed, and arranged in due order, by a mighty succession of able men, whose work today we too lightly neglect. Clinical medicine and surgery were dominated by the knowledge of the morbid processes discovered in this time. Symptoms were correlated with the signs found upon the postmortem table, and upon the shelves of museums. Clinical histories were largely devoted to terminal conditions, for it was only these that brought a patient to a hospital where he died, and where an autopsy could be made. But patients do not die in hospital from the diseases from which they suffer long during life. And in consequence severe limitations were set to our knowledge of disease of all kinds.

Lister's work made possible the third era which depended for the swift and notable advance upon a study of the pathology of the living, upon a study, that is, of morbid



Ambrose Paré Councilor of state and surgeon-in-chief to Henry III, of France

processes in their course rather than when their race was fully run. By multiplying observations made during operations we learned, little by little, how to capture a general truth from a series of individual examples. By slow degrees and grudgingly it was admitted that terminal manifestations of disease and the advanced ravages of morbid anatomy did not constitute all medicine; that earlier symptoms were to be referred to earlier changes in organs exposed during the course of operations. And these changes and symptoms we now realize are themselves but late; still earlier manifestations of aberrant action are being sought patiently and with a success that holds increasing hope for future work.

During all these three periods through Galen, Vesalius, Harvey, Bacon, Hunter, Lister, there has run a vein of experimental



Hippocrates



Galen.

when my hour has come. For them it is the mere quality of effort that counts. Their ideal of operative surgery is something swift and infinitely dexterous, something to dazzle the beholder, and excite his wonder that such things can so be done by human hands. The body of a man is the plastic material in which an artist works, and no art is worthy of such a medium unless it has in it something of a sacrament. Surgery of the "brilliant" kind is a desecration. Such art finds its proper scope in tricks with cards, in juggling with billiard balls, and nimble encounters with bowls of vanishing gold fish. But Murphy was of the true faith. He believed in safe and thorough work rather than in specious and hazardous brilliance. He was infinitely careful in preparation, and compared with many was inclined to be slow; but every step in every operation which I ever saw him do, was completed deliberately, accurately, once for all. It led inevitably to the next step, without pause, without haste; that step completed, another followed. "In sequent toil all forwards did contend." And so when the end came a review of the operation showed no false move, no part left incomplete, no chance of disaster; all was honest, safe, simple; it was modest, rather than brilliant. During the whole operation Murphy talked;

not wasting time, but expressing and explaining aloud the quiet, gentle, dexterous movements of his hands and the purposeful working of his mind. The operation over, he would draw his stool near to the front row of the benches, cross one leg over another, rest his elbow on his knee and talk, as only he in all the world could talk, of surgery in general, of this case in particular, of his faults, of any experiment made to clear a doubtful issue. In these quiet talks there was none of the earlier passion, which had gleamed through him, and which, caught up by his audience had made them throb and tremble with suspense or joy. In them, all his former

or mind were now bountifully displayed: the vast resources of the keenest surgical intellect of his day were now displayed, not with ostentation, or with florid pride, but in such a quiet manner as to show that he rejoiced in the privilege of sharing with others so many fascinating and wonderful things. If in answer to a request a little intellectual gift were made to him, it was welcomed with frank, almost boyish enthusiasm, and with a delight and a humility obviously genuine.

Murphy as a writer and as a speaker was prolific. Whenever he spoke men made haste



L. Pasteur

devise and to perfect the most exquisite surgical implement that has ever been invented "Murphy's button." Up to the time at which experimental work on the anastomosis of hollow abdominal viscera was begun by Senn, Murphy, and others, the method of securing union was difficult, tedious, and unsafe. I well remember to have seen the operation of "pylorectomy" done in the year 1889. A very niggardly removal of a small "prepyloric" carcinoma was made, and the cut end of the duodenum was united to a part of the divided end of the stomach after the first method of Billroth. We counted over two hundred sutures used to effect the junction. Each suture was of silk; for each the needle was separately threaded, the suture passed, tied and cut; a wearisome total of movements of the surgeon and his assistants, involving a great expenditure of time. No wonder the surgeons searched for simpler methods. Senn's bone plates, the first

mechanical apparatus to assist in an anastomosis, were ingenious instruments not very easy to use, requiring a not inconsiderable

following the use of these instruments were sometimes very good and sometimes very bad. While surgeons were struggling with this tiresome and unsatisfactory implement, Murphy introduced his "button." It was the result of a great deal of experimental work done upon dogs, in the early hours of the morning, and in the lean years of his early married life. In this work Mrs. Murphy took her share, giving chloroform to the animals. A few people were privileged to know of the boundless help and inspiration which Mrs. Murphy gave her husband in those hard, but happy days when he was struggling for his place in the work of surgery. His wonderful success was in no small way due to her sympathy, encouragement, and unfaltering belief in him; and to the eager enthusiasm which she showed in all his work. His fame was her fame also. As I offer to him my tribute of laurel for honor and of rosemary for remembrance, it is an added pride that I can do so in her presence. With the help of Murphy's button, operations which had been difficult and perilous at once became so simple that the merest tyro could perform them, and the risk of all operations fell with amazing rapidity. The button was used in every clinic, and upon all occasions where visceral anastomoses had to be effected; and the name and the fame of Murphy traveled round the world. But I still think that the great virtue of the button was not in its own direct use but in the convincing demonstration it gave to us of the essential simplicity of the process of visceral union. By using the button we learned how safely and how rapidly the peritoneal junction took place; there was no need, it was now perfectly evident, for the hundreds of stitches that all surgeons were using. Firm, even approximation for a very few days, would lead, the button showed beyond a doubt, to a permanent and secure fusion of the apposed viscera. The



Andreas Vesalius.



Vesalius demonstrating anatomy.

Lincoln" writes of him: "His voice when he first opened his mouth surprised and jarred upon the hearers with a harsh note of curiously high pitch. But it was the sort of oddity that arrests attention and people's attention once caught was apt to be held by the man's transparent earnestness." How exactly was this the case with Murphy also. No one who heard Murphy speak ever doubted his sincerity. One might not agree; one might indeed profoundly and confidently disagree, with some statement he made, perhaps as though to provoke a challenge, for there was much in Murphy which justified his patronymic, and which discovered his ancestry; but there was never a thought that Murphy himself was speaking other than his deep and tried conviction. He never looked at truth askance or strangely. One who heard Lincoln speak at Peoria wrote: "Beyond and above all skill was the overwhelming conviction imposed upon the audience that the speaker himself was charged with an irresistible and

inspiring duty to his fellow men." Such an impression was often felt by audiences while Murphy was addressing them.

One thing Murphy lacked; in one respect he grievously failed. If we consider the qualities which go to the making of the greatest surgeons, a foremost place must always be conceded to the capacity to train great disciples. The teaching, the diligence, the general outlook upon surgery and a finished technical skill can all be drilled into the minds, and imposed upon the methods of an earnest student. But it is the inspiration, the lofty sense of a sacred mission worthy of all the best that is in you, the dedication with humblest and fullest devotion to the cause of scientific truth, and of loyal service to mankind, that are awakened with a thrill in great men by great teachers. It is here that Murphy fell short. He trained no one worthy to be his successor; no evangelist who could carry into other clinics or to other



Nicholas Senn.

products of the liquefaction of hypertrophied connective tissue, and indicates that in an artificial development of joints all the facts relative to these processes should be utilized. The formation of "false joints" as a result of non-union in fractures of the long bones, led to the recognition of the pathological condition whose counterpart was provoked in the operation of arthroplasty, in which a foreign body was inserted between the end of bones separated at an ankylosed joint, to prevent re-union and to cause the development of a new joint. He then investigates the matter by experiments upon dogs, and proceeds to demonstrate its efficacy upon men afflicted by bony ankylosis of their joints. The whole piece of work is an exemplary instance of the combination of clinical experience and of experimental research leading to the establishment of a new method of treatment in a severe and most disabling condition.

In 1897, Murphy published his article, "Resection of Arteries and Veins Injured in Continuity. End-to-End Suture; Experimental and Clinical Research," in which for the first time he established the principles, and described one of the methods, of arterial suture and anastomosis. As in other articles clinical needs indicate the lines of his experimental inquiries; and a widening of the bounds of surgical endeavor and practice is the result. In 1898, he delivered at Denver the oration on surgery before the American Medical Association and chose as his subject the "Surgery of the Lungs." Independently of Forlanini he suggested the injection of nitrogen into the pleural cavity in cases of hopeless unilateral disease of the lung. No enthusiastic acceptance greeted the suggestion. Murphy himself extended the method in his later work to cases of incipient tuberculous disease; and recent experience has fully justified all his claims and has given sanction to his methods. He again combined clinical experience and research by experiment in his work on "Surgery of the Spinal Cord," published in 1907, and his final summary on neurological surgery in *SURGERY, GYNECOLOGY AND OBSTETRICS*, 1907, iv, 385, was the most accurate and concise survey of our knowledge of this subject which had then been published.

Wherever we turn we find his method to be the same. A wide survey of the subject to be discussed made interesting by the personal magic that he was able to throw into it; a disclosure of the gaps in our knowledge; a suggestion as to the means by which that knowledge or a want in our technical methods can be made good; a record of experiment to elucidate or to solve a difficult point; a wealth of clinical observation and a formidable array of arguments, lead to an inevitable conclusion stated in terms that none could fail to comprehend. In every article of his that we read we can see the working of an orderly mind, of a mind most eager for new truths, and expectant of them. For every subject he seems to have a mental scaffolding by which he guides and arranges the truths as they are fashioned and duly laid in place. He had a zeal for classifications which looked complex

man's life are but futile exercises of an imagination lacking in full understanding and adrift from realities.

Such then was Murphy as I knew him. It is easy now to see how great a figure he was in the world of surgery of his day. When all his work is reviewed, when not only its range, but the wonderful sincerity and the permanent and piercing accuracy of so large a part of it are considered; when we remember his unequalled gifts as teacher, his power of lucid exposition and of persuasive, or coercive argument, his devotion for many years at least to experimental research, it is no exaggeration, I think, to say of him that he was the greatest surgeon of his time. Great men are fitted to their times and in many respects are a reflex of them. But as their times pass their work is seen in far perspective and may appear to shrink in significance. It may then seem to have lost all its originality, and boldness, and force, and we who stand afar off untouched by the magnetism of a great personality, marvel at its influence in its own day. For there are few indeed who enjoy both celebrity and fame. "Mere talents are dry leaves, tossed up and down by gusts of passion and scattered and swept away; but genius lies on the bosom of Memory." How then will it be with Murphy? Judged by the standard of his contemporaries he was an intellectual giant, but of what stature will he be when judged by the standard of history? May I ask you to bear with me while I pass briefly in review some of the main features of the progress of surgery as science and art and tell the tale of some of the great men who have labored in it, from earliest days up to the present time, so that at last we may see how Murphy stands and what figure he will make in the Great Procession.

The earliest remains of man known to exist show that the art of the surgeon was practiced upon him. Wherever skulls of the Neolithic period have been discovered the openings made in them by the trepan are seen. Dr. Marcel Badouin, in 1908, found within a tomb discovered by accident at Belleville the remains of 120 human beings. Eight of the skulls had been trepanned, and the edges of the cut bones were smoothly healed over,



Gabriele Fallopio (1523-62).

showing beyond doubt that the patients survived the operation for periods long enough for this to be fully accomplished. The disc of bone removed is supposed to have been worn as an amulet. The operation of trepanning during the Neolithic period, was also performed in England, in Northern Africa, the Canary Islands, Mexico, and in Peru. It is performed today by the natives of New Ireland, to the east of New Guinea, by methods and with results apparently similar to those of the Neolithic age. Dr. Redman has presented to the Royal College of Surgeons of England a group of five skulls showing the effects of the operation, the instruments by which it is there performed, and the dressings applied to the wound. And travelers tell us that the operation is still practiced in the ancient way, so far as can be judged, by the Quichuas of Peru. Surgery is therefore as old an art as any.

Hippocrates was the first to give form and spirit to the practice of surgery. His observa-



Nicholas Senn

products of the liquefaction of hypertrophied connective tissue, and indicates that in an artificial development of joints all the facts relative to these processes should be utilized. The formation of "false joints" as a result of non-union in fractures of the long bones, led to the recognition of the pathological condition whose counterpart was provoked in the operation of arthroplasty, in which a foreign body was inserted between the end of bones separated at an ankylosed joint, to prevent re-union and to cause the development of a new joint. He then investigates the matter by experiments upon dogs, and proceeds to demonstrate its efficacy upon men afflicted by bony ankylosis of their joints. The whole piece of work is an exemplary instance of the combination of clinical experience and of experimental research leading to the establishment of a new method of treatment in a severe and most disabling condition.

In 1897, Murphy published his article, "Resection of Arteries and Veins Injured in Continuity. End-to-End Suture; Experimental and Clinical Research," in which for the first time he established the principles, and described one of the methods, of arterial suture and anastomosis. As in other articles clinical needs indicate the lines of his experimental inquiries; and a widening of the bounds of surgical endeavor and practice is the result. In 1898, he delivered at Denver the oration on surgery before the American Medical Association and chose as his subject the "Surgery of the Lungs." Independently of Forlani he suggested the injection of nitrogen into the pleural cavity in cases of hopeless unilateral disease of the lung. No enthusiastic acceptance greeted the suggestion. Murphy himself extended the method in his later work to cases of incipient tuberculous disease; and recent experience has fully justified all his claims and has given sanction to his methods. He again combined clinical experience and research by experiment in his work on "Surgery of the Spinal Cord," published in 1907, and his final summary on neurological surgery in *SURGERY, GYNECOLOGY AND OBSTETRICS*, 1907, iv, 385, was the most accurate and concise survey of our knowledge of this subject which had then been published.

Wherever we turn we find his method to be the same. A wide survey of the subject to be discussed made interesting by the personal magic that he was able to throw into it; a disclosure of the gaps in our knowledge; a suggestion as to the means by which that knowledge or a want in our technical methods can be made good; a record of experiment to elucidate or to solve a difficult point; a wealth of clinical observation and a formidable array of arguments, lead to an inevitable conclusion stated in terms that none could fail to comprehend. In every article of his that we read we can see the working of an orderly mind, of a mind most eager for new truths, and expectant of them. For every subject he seems to have a mental scaffolding by which he guides and arranges the truths as they are fashioned and duly laid in place. He had a zeal for classifications which looked complex

greatest of critics. Littré spoke of it as "the grandest surgical monument of antiquity" and considered that the truth of its principles was eternal. A century ago the most eminent of French surgeons, Dupuytren, published a work on "Dislocations." Malgaigne, whose familiar name justly carries great weight, judged that, in respect of its discussion of congenital dislocations, the work of Hippocrates was the richer and more accurate. The discourse of Hippocrates on "Wounds," which I read once again in the early weeks of the War, seems to have, in more relations than one a bearing upon our bitter experience of those most grievous times. Certain it is that for 1,500 years afterward nothing so apt was written; by no one were the essential problems of wound treatment so well understood. The dressings applied to wounds, he tells us, were to be of new materials; water, if not clean and sweet, was to be boiled and strained before use; care of the surgeon's hands and nails was thought most necessary. Oil and wine were the balsam for a bruised or dirty wound; or for one long neglected. The accurate apposition of the wound surfaces and the exclusion of air were means to secure rapid healing by "primary intention" which was clearly distinguished from "second intention." He dreaded amputation of a limb, especially near the trunk: these operations today are in respect of their mortality still among the most lethal of all. As Sir John Tweedy has said, "The directions which Hippocrates gives concerning the arrangements of the operating room, the placing of the patient, the position of the assistants, the disposition of the lighting, the care to be taken of the surgeon's hands, the need of ambidexterity, all indicate a careful and experienced practitioner." Hippocrates may count among his greatest glories that he recognized the essential unity of medicine and surgery, or rather that he did not distinguish between them: that he urged and practiced the use of all means for the examination of the patient; that he saw no degradation as did so many later ages in the use of a physician's hands in the service of the individual patient, for whose welfare, as Aristotle said, all medicine exists. And his

system which embodied observation, reflection, judgment, all multiplied to make experience which shall decide right action, stands firm until this day. He knew its difficulties for he tells us that "experience is difficult, verification fallible, observation long and costly, and occasion fleeting." There is one gap, however, a significant one in view of my later contention, in his method. He did not put matters to the proof by way of experiment. The experimental verification or denial of a suggested truth, or the new adventures in thought and action opened up by this method were not for him.

After Hippocrates we may take a long stride in point of time to the days of Celsus, who lived in the reign of Augustus Caesar. It is interesting to remember that Celsus, the manuscript of whose work "*De Re Medicina*," written about 30 A.D., was discovered in 1443 in the Church of St. Ambrose at Milan by Thomas of Sezanne, afterwards Pope Nicholas V, was almost certainly not a physician. He was a noble of the family of Corneli, who wrote works on medicine, agriculture, philosophy, law and the art of war, in the spirit of an interested amateur. The deep prejudice of the patricians against the adoption by one of their class of medicine as a profession was unconquerable. And the internal evidence in all his writings is opposed to the view that he could have practiced as a physician; he mocks at the value of medicine, and esteems the empirical methods of folk medicine as of equal interest and value to the academic methods of his time. He tells us that the true art of medicine lies in the correlation of theory and practice, the one guiding and controlling the other; speculation should guide thought but not determine practice. References to surgical matters are found in all the Books, but Books VII and VIII, are devoted exclusively to the consideration of surgical matters. The great feature of these is that they record all the changes which had occurred in our art from the time of Hippocrates and especially informs us of the great attainments of the Alexandrian school in anatomy and surgery. He describes wound treatment in detail; arrest of hemorrhage in a wound may be effected by packing and

IMMOBILIZATION OF THE PROXIMAL FRAGMENT IN FRACTURE OF THE JAW ABOVE THE ANGLE

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IN the fracture of the lower jaw as in fracture of any of the long bones, it is true that the shorter the proximal fragment, the less is one able to control it by external fixation apparatus.

The rule for reduction and retention in fractures in the long bones when one can not control a proximal fragment is to place the distal (controllable) fragment in such a position that it occupies as nearly as possible its normal relation to the proximal (uncontrollable) fragment and retain it in this position until consolidation occurs.

In a fracture of the lower jaw at or above the angle, as in fracture in other bones, the primary displacement of the fragments varies with the force, and with the direction of the application of the force, while the secondary displacement will depend for its causation on muscle pull or later on the pull of contracting scar.

When the fracture line lies through the angle, i. e., running obliquely downward and backward or when it lies in front of the angle running downward or downward and forward from just behind the third molar region, reduction and retention are seldom difficult: first, because the displacement is never very marked, second, because the fragments can be easily grasped by the reducing fingers, and third, because the proximal fragment being longer is more readily controllable by a "saddle" molded to fit over the anterior (sub-mucous) margin of the ramus and depending for its "point of support" on "cap" or "gutter" splint fastened on either lower or upper teeth.

But when the line of fracture runs through the ramus, above the level of the upper border of the body of the jaw, the case is different.

The temporal muscle is attached not only to the coronoid process but also to the anterior aspect of the ramus, almost if not quite all the way down to the point at which it joins the body. This muscle draws strongly

upward or upward and backward on the coronoid in fracture through the ramus above the level of the upper border of the body. And as it draws upward and backward on the coronoid, this causes the lower end of the proximal fragment to travel forward, as the pivotal point is the condyle.

The internal pterygoid is attached to the internal aspect of the jaw at the angle and some of its fibers are attached to the inner aspect of the ramus as high up as entrance to the inferior dental canal, in fact its attachment somewhat corresponds on the inner aspect with that of the masseter on the outer aspect. It draws the angle inward and forward as well as upward; but those of its fibers which insert into the inner aspect of the ramus, above the level of the upper border of the body, when they exist above a fracture line, draw the proximal fragment inward and forward.

The masseter tends to draw the angle forward and upward, but the malar and zygoma from which its fibers take origin, are placed in most persons, farther lateral than are the angles. Their point of insertion, and, therefore, the pull of the masseter, is slightly outward as well. If now any of the fibers of the masseter are inserted into the proximal fragment, they pull upward and forward and outward on it.

We have, therefore, three muscular forces pulling upward and forward on the proximal fragment, the temporal, the internal pterygoid, and the masseter.

Of the forces opposed to it. And thus it happens that when the displacement of the proximal fragment in fracture at or above the angle is due to muscle pull, the lower end of this fragment is carried forward in all cases and most often forward and inward. If reduction and fixation be not accomplished, the muscles named,

Galen's dissections were confined to the bodies of animals and the facts so discovered were applied by analogy only to the bodies of men. If a physiological hypothesis charmed him, his anatomical observations had to give way to it. His mind ran riot in speculation, often fantastic and far-fetched, but occasionally showing a gleam of real insight, as for example in his belief that there was a close primary correspondence between the sexual organs of the male and female. But the evils were great and lasting. It was his rash conceits rather than the facts of his experiments, or his sound anatomical knowledge, and broad scientific purpose which were remembered, and indeed almost sanctified, by all men for a period of over 1500 years. Though he was the first of experimenters he asserted that speculation should lead experience and he exalted a debased metaphysics to a height exceeding that of strict and sober observation. In the times of intellectual stagnation in the Dark Ages the writings of Galen had an unequalled authority; and it was only by a notable independence that Abdollatif dared to assert that anatomy was not to be learned from books and that even Galen's observations were less to be trusted than the evidences of one's own senses. The result was the sterility and the abasement of medicine, until the experimental methods were revived by his direct intellectual descendant, William Harvey.

In a rather different sense, and in a different scene, the great traditions of medicine were handed on by Avicenna, who was born in Bokhara about 980 A.D. It was through him that the works of Hippocrates and Galen became widely known throughout the East, and finally filtered back into Europe through the Arabs and Moors at a time when learning and culture had almost vanished. The Arabian mind was essentially concerned with compiling knowledge from all sources rather than in initiating inquiry; and a great and useful work, in this direction, was carried out by them during the brightest days of the Saracen Empire. The modern world indeed owes much to their careful preservation of knowledge and their multiplication of copies of standard medical works, before the era

of printing; even though the science and art of medicine in itself did not, through their efforts, advance one step. In Avicenna we find a mind as keen as that of his great predecessors, viewing the human body and its ailments in his own way, although numerous points of resemblance to the works of Galen and Hippocrates are everywhere evident. He was not an experimenter so much as a philosopher and the power of his mind over so many later centuries is probably to be attributed to his masterly grasp of all sciences as well as of medicine and surgery. In the art of surgery he can hardly have attained the skill of the great founder, as far as can be judged by the records in the Canon. We do not find all those evidences of mastership in technique which shine so strongly through the writings of Hippocrates. As is characteristic of the Eastern today the knowledge which he possessed and, to judge by the records of his successes, utilized with great practical effect, was of a different order, both intuitive and logical, but intuitive before logical. His skill in dealing with fundamental mathematical problems is hardly surpassed at the present day and in this respect he has been almost the only instance of a great mind applying mathematical concepts to medicine and surgery, up till the present era.

Of other writers before the sixteenth century, it is not unfair to say that they all, or almost all, were merely recorders, encyclopædists it may be, but devoid of any spark of new thought or of wise generalization. They preserved with reverence the old tradition, and the ancient knowledge, they discussed every device, and, at interminable length, the meanings of the old scriptures; they tortured new meanings out of old phrases, they were diligent in dressing old words new, and their scholarship was judged by their ingenuity, or infinite prolixity, in so doing.

The anatomists of the Middle Ages prepared the way for new enlightenment. The oldest treatise on anatomy comes from Egypt. The papyrus dates probably from the reign of Thutmosis I, that is from before the crossing of the Red Sea by the Israelites. It shows the heart with vessels proceeding from it, the liver, spleen, kidneys, ureters,

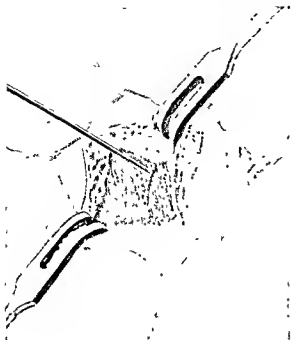


Fig. 3. Locating the depth and position of the coronoid with a needle

in front of the coronoid and close under the edge of the malar. In both instances the nail was passed until the head could be easily buried under the skin. In both cases it failed entirely to prevent the forward movement of the fragment

The method here illustrated has been used by me now in four different cases and with a good result in each. Only local anæsthesia is necessary and the operation is a very minor one. After anæsthetization of the area, one who is not quite sure of the anatomy would do well to locate the depth and position of the coronoid by sounding for it with a needle. The incision should lie parallel with the fibers of the facial nerve which go to the frontalis and upper half of the orbicularis palpebrarum and should extend only through the skin. The upper one-quarter of it overlies the zygoma, the remainder of it reaches from one-half to three-quarters of an inch below it. It is not more than 1 inch in length.

A needle or probe is passed close to the zygoma, down through the masseteric fascia and the masseter muscle until the coronoid is felt. A closed scissors is passed alongside this

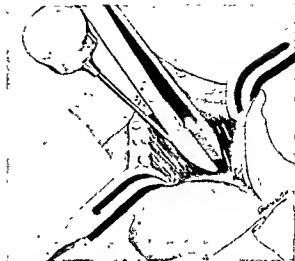


Fig. 4. A scissors or pointed artery forceps is introduced along the probe or needle and opened so as to split the fibers of the masseter.

probe until the point of the scissors rests against the coronoid. I like a pointed scissors with long strong handles. The probe is withdrawn and pressing the point of the closed scissors firmly against the coronoid the scissors are opened, splitting the fibers of the masseter from the zygomatic border downward for an inch. Two small strong retractors are passed into this slit and, holding their ends firmly against the coronoid, retraction of the split masseter is made and the scissors are withdrawn.

and the nail being passed. The nail should exactly fit the hole. The hole is drilled through the tip of the coronoid as close to the edge of the zygoma as possible.

The nail I have used is an ordinary wire nail with a thin flat head and is about an inch and one-half long. It is passed straight in until its head impinges on the outer surface of the zygoma. If it is turned up very slightly its point soon comes into contact with the under surface of the skull and it may not go far enough. When it is properly passed, it effectively prevents the coronoid from rising as the nail catches at one end under the zygoma and its point comes into contact with the base of the skull. The wound is closed

dozen of his predecessors who appeared to have stood upon its very brink. As Cuvier says, we are often on the edge of discovery without suspecting it. There can be little doubt that the pulmonary circulation had been recognized by the unhappy Servetus, who, with his works, was burned as a heretic at Geneva in 1553 by Calvin.

In 1559, a pupil of Vesalius at Padua, Realdus Columbus, may be said to have suggested the existence of this circulation by inductive reasoning, but to ingenious speculation the minds of men were hardened. It was open demonstration and proof that were needed to press home an opinion so contrary to all accepted teaching.

A discovery is rarely, if ever, a sudden achievement nor is it the work of one man; a long series of observations each in turn received in doubt, and discussed in hostility, are familiarized by time, and lead at last to the gradual disclosure of the truth. Harvey's discovery was finally due to his application of the experimental method of Archimedes and Galen to a problem of which many of the factors were already known; or as he himself tells us, the circulation of the blood was held to be completely demonstrated by experiment, observation, and ocular inspection against all force and array of argument. He writes: "When I first gave my mind to vivisections, as a means of discovering the motions and uses of the heart and sought to discover these from actual inspection and not from the writings of others, I found the task so truly arduous, so full of difficulties, that I was almost tempted to think with Frascatorius, that the motion of the heart was only to be comprehended by God. . . . At length and by using greater and daily diligence, having frequent recourse to vivisections, employing a variety of animals for the purpose, and collecting numerous observations, I thought that I had attained to the truth."

The reception of this discovery was generous at home; tardy and reluctant, or openly hostile abroad. But it was everywhere eagerly and hotly discussed. Harvey says: "But scarce an hour has passed since the birthday of the circulation of the blood

that I have not heard something for good and for evil said of this my discovery. Some abuse it as a feeble infant, and yet unworthy to have seen the light; others again think the bantling deserves to be cherished and cared for. These oppose it with much ado, those patronize it with abundant commendation."

Riolan, distinguished as an anatomist, and professor at the College de France, denied and derided it. What Harvey felt of the opposition may be learned from his reply to a friend who urged upon him the publication of his later work *De Generatione Animalium*. "And would you then advise me to quit the tranquility of this haven, wherein I now calmly spend my days and again commit myself to the unfaithful ocean? You are not ignorant how great troubles my lucubrations, formerly published, have raised. Better it is certainly at some time, to endeavor to grow wise at home in private than by the hasty devulgarion of such things to the knowledge whereof you have attained with vast labor, to stir up tempests that may deprive you of your leisure and quiet for the future." Nevertheless, compensations and rewards came to him in full measure, and he had the satisfaction of living to see the general acceptance of his discoveries. This discovery, as Whewell said, implied the usual conditions, distinct general notions, careful observation of many facts, and the mental act of bringing together these elements of truth. Boyle wrote: "I remember that when I asked our famous Harvey what were the things that induced him to think of a circulation of the blood, he answered me that when he took notice that the valves in the veins of so many parts of the body were so placed that they gave a free passage to the blood toward the heart, but opposed the passage of the venal blood the contrary way: he was incited to imagine that so provident a cause as Nature had not placed so many valves without design: and no design seemed more probable than that the blood should be sent through the arteries and return through the veins whose valves did not oppose its course that way. That supposition his experiments confirmed."

But the experimental method of Galen, revived by Gilbert, physician to Queen

MANAGEMENT OF THE CERVICAL STUMP AND THE ROUND AND BROAD LIGAMENTS WHEN PERFORMING SUPRAVAGINAL HYSTERECTOMY

BY DOUGAL BISSELL, M.D., F.A.C.S., NEW YORK CITY
Attending Surgeon, Woman's Hospital

IT is not my purpose to review here the development of the technique of supravaginal hysterectomy or intra-abdominal amputation of the corpus uteri. History has recorded the names and individual achievements of each operator who has contributed to its completion, and to them we owe a debt of gratitude. Further comment is unnecessary, save to note that the final chapter in the standardization of this technique was not enacted until the uterine arteries were ligated separately. Prior to the adoption of this particular feature, the mass ligature was used about the cervix, which resulted in depriving the cervical area above it of blood supply and in necrosis. The essential features then in the standardization of the technique are the return of the cervical stump, covering it with peritoneum and ligating separately the uterine arteries. Until this last feature was introduced, the technique for supravaginal hysterectomy could not be considered as standardized. Various ways have since been adopted in dealing with the cervical stump and ligaments, but they are all non-essential modifications and neither add nor take away from the principles established years ago.

Before considering special surgical features with regard to the management of the cervical stump and the round and broad ligaments, prophylactic treatment of the cervical canal should be given consideration.

There are valid objections, theoretically at least, to the use of an intra-abdominal cleansing alone of the cervical canal for the obvious reason that the instrument which severs the cervical tissue necessarily becomes contaminated while crossing the unsterilized cervical canal. Practically, however, the field is seldom so contaminated as to prove disastrous, but as the possibility of serious results always exists, the risk should be

avoided if possible and an effort made to insure surgical cleanliness of the canal prior to operation.

Several methods are in use today of preparing the cervical canal per vaginam prior to operation. Among these we find advocated the application of a 3 to 5 to 7 per cent tincture of iodine, a 5 or 10 per cent solution of nitrate of silver, and pure carbolic acid followed by alcohol.

The application of any of these chemicals by means of a syringe would seem unwise unless the cervical canal has previously been well dilated, as their injection into the cavity otherwise may drive the fluid through the fallopian tube with resulting chemical trauma to the peritoneum.

A comparative macroscopic study of the action of these chemicals on the uterine mucosa can be easily made by applying them to the lining membrane of a removed uterus which has been split open. Under these circumstances, it will be observed that the iodine exerts marked action on the lining membrane of the uterine cavity but comparatively little action on the cervical mucosa whereas nitrate of silver and carbolic acid have an immediate and profound action on both. Neither nitrate of silver nor carbolic acid in the limited quantity applied affect deeply the mucosa of the many folds of the cervical canal, nor penetrate deeply the glands but as their action appears more extensive on the mucosa of the cervical canal than does iodine, either chemical would seem to exert a greater protective influence. My personal preference with regard to preliminary treatment of the cervix is the application of pure carbolic acid on a small cotton probang to the entire cervical canal followed by the application of alcohol. Whether the cervical canal has been treated prior to operation or not, the application of carbolic acid followed by alcohol to

or living." Often he recounts the details of an experiment but leaves us to draw the conclusion. He changed the whole spirit of practice and placed knowledge on the throne of authority. The day was gone forever when a pure and dangerous empiricism could be practiced: surgery became a science and its craft a rational procedure. The museum which he founded and which still bears his name in the Royal College of Surgeons of England is unsurpassed in all the world, and his own specimens are still to be seen to bear witness to his incomparable services to pathological anatomy. For Morgagni no praise can be too high. His letters may be read today with delight; though his knowledge of disease is, in the modern view, often steeped in mediævalism, his long array of facts and of relevant instances, his description of morbid parts, his accurate and searching generalizations are among the greatest contributions to medical literature in all the ages.

Such was the progress of surgery up to the early years of the nineteenth century. The discovery of the anæsthetic properties of ether and chloroform completely changed the possibilities of the range of applications of surgery to morbid conditions and enlarged also the scope of experimental work upon animals. But in every direction the surgeon's work was hampered and frustrated by the occurrence of infection and all its dire consequences, in the majority of the wounds inflicted. It was for Lister that the world was waiting and his coming changed everything. For, as Carlyle said, "The great man was always as lightning out of Heaven: the rest of men waited for him like fuel, and then they too would flame."

Lister, as every one knows, introduced the antiseptic system into surgery. Before his time the wounds inflicted by the surgeon, or those received in civil life as in cases of compound fracture, became septic almost as a matter of course. The decomposition of the wound discharges was formerly held to be due to contact with the oxygen of the air. Lister recognized that the investigation of many observers, ending with Pasteur, which showed that fermentative and putrefactive processes depended upon minute organisms,

were applicable in surgical work also. In the year 1836, a French observer, G. Latour, had pointed out that the tiny particles of which yeast was composed were capable of multiplication, that they were in fact alive, and that it was by their propagation that the change known as fermentation, the change of sugar into alcohol, was produced. Both Latour and T. Schwann showed that this process could be suppressed by the application of heat to the yeast. Schwann, especially, called attention to the fact that the putrefaction of organic substances was due to these minute living bodies, and that putrefaction and fermentation were essentially one. The weighty authority of Liebig was opposed to this view, and Helmholtz, after a time of wavering, finally ranged himself against Schwann. It was in 1856 that Pasteur began the series of experiments which demonstrated finally that micro-organisms were the cause of fermentation and of putrefaction, and that for each form of fermentation studied by him; yeast fermentation, lactic acid fermentation, butyric acid fermentation, there was one specific cause, and only one.

Lister had long been working on the problem of inflammation, and of the decomposition of wound discharges. When therefore early in 1865 he read of the work of Pasteur his mind was prepared to receive the new evidence, and to put it to the proof in the treatment of surgical cases. It is impossible for us now to realize the horrors and the mortality attached to surgical work, at the period when Pasteur's papers were written. In almost every case the discharge from a wound underwent putrefaction; inflammation of varying degrees of severity attacked the wounds, pus poured from their surfaces, and hospital gangrene, erysipelas, and pyæmia, the most desperate form of blood poisoning, occurred with terrible frequency. The clean healing of a wound, by "first intention" rarely occurred. A surgeon was more than content, he was eager and gratified to see a thick creamy discharge of "laudable pus" from the surfaces of a wound. Very few operations were performed, and then as a general rule only in cases where death, or extreme disability, was otherwise certain.

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combined in full measure the wide, patient, penetrating inquiry, the comprehensive generalization, and the sound wisdom of the method of Hippocrates, with the demand for experimental illumination or proof afforded by the method of Galen, of Bacon, and of Harvey. He combined in his own work the best of all the schools, and it was no accident that the greatest of all discoveries relating to the science and the art of surgery was made by him.

If a man's services to humanity are the standard by which we measure his value then Lister may be counted as perhaps the greatest man the world has ever produced. For he has been the means of abolishing, or assuaging, the sufferings of men and women to a degree which is quite incalculable, and as I said of him years ago, he has been the means of saving more lives than all the wars of all the ages have thrown away.

As the result of Lister's work the way was cleared for an immense and immediate advance in surgical practice, and for an extension into regions that before had been denied even to the most intrepid surgical adventure. The result is known to all the world. Diseases which were beyond the reach of any are now within the grasp of all surgeons. Operations whose mortality even 25 years ago was so heavy as to be almost prohibitive are now performed with a frequency and with a degree of safety which never cease to excite our wonder. But Lister's work did something else; it showed how research for the future must be conducted if our progress were to be both enterprising and safe. It showed that clinical research and experiment must forever run together.

The achievements of clinical research have been gigantic since Lister's day. The safety which he brought into all our work resulted in an advancement, little by little, of the attack upon the diseases of internal organs, and it exercised in consequence a very powerful, germinal influence upon internal medicine. If our knowledge of the disease of the abdominal viscera of 30 years ago is compared with that of today the truth of this statement will appear. In connection with the diseases of the gall-bladder and bile-



Michael Servetus

ducts the work of Courvoisier published in 1890 is a complete record; it is indeed one of the most monumental works ever produced in surgical literature. What was known then, in comparison with now? Nothing of the early symptoms of gall-stones, of the relation between them and visceral and other infections, nothing of the symptoms due to the impaction of stones in one or other of the ducts; almost nothing of the possibilities of safe relief by surgery. Lister's work has not only been the means of relief to the patient, in his agony; but has been the instrument by which our own most prolific inquiries into the symptomatology, etiology, and, in no insignificant degree, the pathology of this disease has been made. Of gastric ulcer as distinguished from cancer of the stomach our knowledge 30 years ago was trivial compared with what it is today. Much of the teaching of those days is not confirmed by the surgical inquiries of today; and it is now I suppose admitted universally that unless the physician

intra-abdominal force to act directly on the posterior, or properly speaking, superior surface of the uterus the action of the ligaments ceases

The round and broad ligaments are not in constant action but function occasionally and have long intervals of rest, whereas the fascial diaphragm of the pelvis is in constant action. The function of these ligaments therefore correspond to that of muscle tissue elsewhere and they are capable of standing occasional strain only, whereas the function of the pelvic diaphragm corresponds to that of fascial tissue elsewhere and is capable of resisting constant strain

As the round ligament contains a greater amount of tissue and probably exerts a greater resisting force than the broad ligament, I will direct my argument against the use of this ligament

What is the action of the round ligament and what purpose does it serve when anchored to the cervical stump in the operation of supravaginal hysterectomy?

Those who advocate the anchoring of the round ligament to the cervical stump must do so with the idea that the action under these circumstances is constant. Though such action is contrary to nature's plan, let us grant for the sake of argument, that this theory is true. What then is the direction of its action and what effect must it have upon the position of the cervix?

The fixed point of action of the round ligament is at the internal ring or where it emerges from the inguinal canal, and as this point is situated on a vertical plane considerably anterior to that of the cervix, and on a horizontal plane considerably above that of the cervix, the direction of its action must be forward and upward so that if the action of the round ligament, when anchored to the cervix, be effective, the direction of its influence must be toward the symphysis.

If this reasoning is correct, the action of the implanted round ligament produces a result contrary to that desired, for the normal position of the cervix is in the vicinity of the coccyx, and to lift the cervix up or pull it forward, displaces it. If the implanted round ligament influences the normally posed cervix

in the direction of the symphysis, how much more must it influence the already displaced cervix in the same direction?

As the combined strength of the round and broad ligaments is comparatively little when contrasted with the resistance offered by the pelvic diaphragm, and as the fascial and muscular tissues of this diaphragm are not in the least injured when supravaginal hysterectomy is performed, it would seem reasonable to conclude that the combined influence of these ligaments when anchored to a normally posed cervix is nil.

Theoretically, it would therefore appear that the influence of the round and broad ligaments, when anchored to the cervix, has no effect on the position of the cervix whether normally or abnormally situated at the time of the operation. But let us approach the problem from a different standpoint. What practical proof have those to offer who advocate the anchoring of these ligaments, that the cervix may descend if the ligaments are not anchored to it or that the ligaments when anchored to it act to insure the normal position of the cervix and prevent the possibility of its descent? The fact that a cervix is found in low position following supravaginal hysterectomy where these ligaments were not anchored, is alone not sufficient evidence to conclude that its normal position is a sequel to the operation and the result of not having implanted these ligaments. Exact data as to its position prior to operation are necessary in forming a conclusion, and more than one instance of such a change in position is required to establish the theory that this change in position is due to not having implanted the ligaments. Nor is the fact that, because the cervix, previously in normal position, has descended after the ligaments have been anchored to it, proof of the utility of the ligaments in maintaining or insuring the position of the cervix.

In the follow-up clinic at the Woman's Hospital, I have examined during the past 2 years and 8 months, 130 cases of supravaginal hysterectomy done without anchoring the round ligaments in the cervical stump; in 127 of these cases the cervix was in normal or practically normal position prior to operation;



Harvey demonstrating the circulation of the blood to Charles I

which answers not only its own question, but contributes in its own degree to the final answer embracing the entire sequence of experiments. The single experiment may be simple. But in respect of a series, each member of which is dependent upon its predecessor, and provokes its successor, and all of which illuminate or decide some problem suggested by clinical research, nothing has been done in surgery comparable to that which in chemistry has been achieved by Fisher and Abderhalden.

These brief glimpses at the progress of surgery show that its epochs may be considered as three in number.

In the first and longest the writings of Hippocrates and Galen were regarded as an inspired gospel. By them the minds of men were held captive, and their imagination enslaved, and every new adventure in thought or action suppressed or cramped. To seek in them for knowledge was all the effort of every man. What was written in them was truth, what was outside them rank heresy. Where the meaning was not as plain as day the most endless inquiry and discussion

ensued. The controversies which then shook the intellectual world to its very foundation, are seen now to be only laughable both in their methods, and in their quaint decisions. In later ages to challenge the truth or the final revelation of any teaching of Galen's was almost blasphemous, and it required a rare and reckless courage to say, as did Henry of Mondeville: "God did not surely exhaust all his creative power in making Galen." The prophets and seers, who little by little, and with very needful caution, led the world through this black night, death's second self, into the dawn, were the anatomist, Mondinus, Vesalius, Fabricius, Fallopius, and others. By their work the assertions of the old scriptures could be openly gauged. In gross anatomy a structure stands out for all to see. If Galen's teaching denied the truth disclosed by dissection it was most gently and tentatively refuted, heretical and perilous as such a work might be. And as normal anatomy grew it was joined by morbid anatomy, and at last came Morgagni and Hunter. They established the second great era in which the pathology of the dead was studied with a

TUMORS OF THE BREAST

BASED ON A STUDY OF SEVENTY-SEVEN CASES PERSONALLY OBSERVED¹

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THE present study is based upon all of the cases of tumor of the breast that have come under my observation since November, 1905, except a few cases, perhaps 25 or less, that were operated upon either in private homes, or outside hospitals, or under other circumstances which rendered the keeping of

an-
dilig-
nancy observed with the number of each type were as follows: adenocarcinoma, 7, scirrhus carcinoma, 17, duct cancer, 4, lymphosarcoma, 1, gland-cell carcinoma, 1, squamous carcinoma, 2, medullary carcinoma, 2, metastatic carcinoma, 1, cylindrical cell carcinoma, 2, not classified, 12

Correctly to classify carcinoma microscopically necessitates, as has been pointed out by Deaver and others, a large number of sections, and had this procedure been carried out in all cases above reported, it is not at all unlikely that the classification might have differed considerably from the one given.

Inasmuch as the predominating type of cancer in this group of cases supports the generally accepted view that the majority of cases of cancer of the breast met with would be classed clinically as belonging to the scirrhus type, I think it may be said that it represents fairly accurately the relative frequency of the occurrence of the different types. It is, of course, well recognized that the results of the microscopic study of tumors do not correspond with those obtained from the clinical study of the same cases. It is important that the two methods of study be combined whenever possible.

No composite tumors were found in this group. In one case, from an examination of a frozen section there came back the report, "sarcoma," and in another the report came back, "non-malignant." Further study in these cases proved them both to be carcinoma of the scirrhus type. Experiences similar to

the above are not uncommon and emphasize the necessity of examining numerous sections in a certain percentage of cases before making the diagnosis. I have for long made it a rule to do a radical operation in all cases in which the report on frozen section comes back as malignant, but in cases wherein the clinical examination of the case leads to the conclusion that the trouble is malignant, a radical operation is likewise done, even though the report on the frozen section comes back, "benign."

In 11 of the cases there was, in addition to the tumor present, either depression of the nipple, ulcers of the skin, or fluid discharging from the breast. The fluid discharge was in some cases colorless and in others, bloody. The character of the discharge does not indicate the character of the growth, so far as the question of malignancy is concerned. One may have either a bloody or a clear discharge from the nipple in either benign or malignant trouble. Discharge from the nipple does indicate, however, that the pathologic change is within the duct. In 2 of the cases reported in this series, a discharge from the nipple was the only sign of trouble present. There was no tumor. One of these 2 cases proved to be malignant and the other, non-malignant. The fact that a discharge from the nipple may be the only sign of cancer demands emphasis.

The youngest patient in this group was 17 years of age, female, unmarried. She had a duct cancer. The breast and the fascia underlying it only were removed in 1908. She is married and living at the present writing, but whether or not there are any

first, because of the age; second, because of the length of time (2 years) that elapsed after the appearance of the tumor before she consulted a surgeon, third, because of apparent permanent cure after simple removal of breast and underlying fascia.

¹ Read before the American Association of Obstetricians and Gynecologists, Cincinnati, Ohio, September 15, 1910.



John Hunter

work, testing hypothesis and discovering new truths. Since Lister's day there has been a steadily increasing recognition of the value of such work and of the urgent necessity of continuing it, of enlarging its field so that it may be coterminous with medicine itself. We are indeed newly entered upon another stage, the stage of combined research in which clinical observation, inductive and deductive processes of reasoning, and experimental inquiry are linked together. In its progress so far, the work of a few men stands out as of the utmost significance. Horsley's work upon myxædema, cretinism, and on the functions of the thyroid gland; Ferrier's, Macewen's, and Horsley's researches upon cerebral affections and cerebral localization; Senn's work upon the pancreas and upon the intestines; Kocher's work upon cerebral compression, and upon the thyroid gland; Crile's work upon shock and upon blood transfusion; and Harvey Cushing's work upon diseases of the brain and the pituitary gland. Since Lister rid all operations upon man and



John Hunter

upon animals of their former terrors, many surgeons have turned to experiment in order to perfect and to illustrate their own work, to test an hypothesis, to search for new procedures or to discover an explanation of clinical phenomena whose meaning was difficult to unravel. In recent days few men have displayed so vast a range of clinical interests, so keen a zest for relevant experimental inquiry, so logical a mind, such frank intellectual honesty as Murphy. He may justly be ranked as one of the earliest and one of the greatest exponents of the method of combined research.

Murphy's first work to attract the attention of all surgeons was that which led him to

not made; but, as the laboratory report received later showed "early scirrus carcinoma," I thought it just as well to postpone radical operation until there was some sign of the return of the trouble, for which I told the patient to keep a careful watch. What should have been done with this patient, in my judgment, at the primary operation was a total removal of the breast and axillary glands. I shall refer to the question of the extent and character of the operation later on.

In 42 cases a primary radical operation was done. In 14 cases a radical operation was done, following an excision of the tumor and an examination of a frozen section. In 12 cases the gland only was excised. In only a little more than 50 per cent of the malignant cases was an immediate radical operation regarded as necessary.

The shortest time that elapsed after the trouble was first noticed until a doctor was consulted was 4 days. This proved to be a fibrous tumor, which was removed 9 years ago, and the woman is now in perfect health. The longest time intervening between the first symptoms and the visit to the surgeon was 34 years. This was the case of Mrs. H. T. reported above.

In this series there were 2 cases occurring in males. In both the tumors were benign. This corresponds very closely with Schuchardt's finding, which was that about 2 per cent of all neoplasms of the breast were found in men. The combined tables of Primrose, Judd, and Deaver, as compiled by the latter, show that .88 per cent of the cancers of the breast occur in males.

Only 4 of the cases reported in this series had coexisting maladies. One of these had a fibroid tumor which was removed some months after the radical operation for carcinoma of the breast. In another patient, a round ligament operation for retroflexion was done at the same time the breast was operated upon. In still another case, a hæmorrhoidectomy was done. Both the latter patients had benign tumors. In one patient the breast was removed for what proved to be benign tumor, 2 years after hysterectomy for carcinoma. The tumor in this case appeared 6 months before the hysterectomy was done.

Of 22 cases of cancer from which we have late reports, 13 had involvement of the axillary glands at the time of the operation. Of these 4 are living and well after 5 years or more — 30 per cent; 3, after 3 years or more — 23 per cent; 4, less than 3 years. One had a recurrence and 1 is dead. There are 7 cases in which no gland involvement was found. Of these 2 are living and well after 5 years or more; and the remaining 5 are living and well but are within the 3-year period. One of these cases, reported as well in the 3-year period, is that of Mrs. H. T. above reported, who had a secondary operation for a recurrent nodule, in the spring of 1916. Of the patients who are dead, two had both metastatic and local return of the trouble. Six had no local return but metastasis only: 1 to the liver, 1 to the stomach and bowels, 1 to the lungs, 2 to the brain, and 1 died of metastasis involving the upper end of the femur, the upper part of the cord, and the brain (3 in 8 went to the brain).

The diagnosis in all these cases, save 2, was confirmed by laboratory examination.

In the 16 benign cases of which we have late reports, there has been no return of the trouble except in Mrs. L. who reports that she has had a lump in the arm pit for 6 months. The laboratory report on this specimen was benign adenoma. The tumor only was removed. I have not been able to see the woman and cannot say whether this means that there was a mistake in the diagnosis at the time or just what the correct explanation of the lump in the axilla is.

There was no operation mortality. In this series we have had in all 6 cases that have passed the 5-year period. This gives us 27.2 per cent of 5-year cures, and 13.6 per cent of 3-year cures. It will be remembered that we had thirty per cent of 5-year cures in the 13 cases that had axillary involvement at the time of operation, 2.8 per cent more 5-year cures than is shown in the whole series including those who had no axillary involvement. This, I take it, is only one of those vagaries with which one sometimes meets in the study of statistics, and in no wise contradicts the fact that axillary involvement adds to the gravity of the prognosis. How-



Lord Lister.



Sir Victor Horsley.

button itself was occasionally a danger. After the operation of gastro-enterostomy it sometimes remained for many months in the stomach; when it passed on to the lower intestine it might cause obstruction, or it might ulcerate its way through the intestinal wall. We learned from the use of the button not that the button itself should be used, but all the secrets of the principles of entero-anastomosis. It is not the least exaggeration to say that Murphy revolutionized the methods of visceral anastomosis, and was partly responsible for giving that impulse to abdominal surgery which in later years has carried it so far. A characteristic example of his method of approaching a surgical subject to which he desired to contribute is shown in his work on "Ankylosis," which he began in 1901. Up to that time the treatment of stiff joints was unsatisfactory and in cases of severe ankylosis, whether bony or densely fibrous, was almost hopeless. Murphy says he proposes to begin the study of his subject by some questions. "What are joints? What is

the embryology of joint formation? What is the pathological histology of acquired arthroses of false joints? What is the pathology of hygromata (acquired endothelial lined sac?) Can they be produced artificially? What is ankylosis? What are the pathological and anatomical changes included in the term? What tissues are involved? From a practical standpoint, into what classes may it be divided? When ankylosis has formed what are the limitations of surgery for its relief? Can we re-establish a movable, functioning joint with synovial lining? Can we restore motion and to what degree? In what class of cases can the best results be secured? Can we for the future promise better than the flexible, fibrous unions that we have secured in the past?"

He then discusses the development of joints in the embryo, and the method of bursa formation in early and in adult life, shows that hygromata and ganglia are the

TWO UNUSUAL NERVE LESIONS

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MILITARY Surgery has directed our attention to lesions of the peripheral nerves in a way that the longest experience of civil practice could never have done, and has emphasized in a special degree the importance of exact anatomical relationships. If the surgeon is to be more than a competent handicraftsman, his knowledge of the paths pursued by the peripheral nerves, as well as the muscles supplied by them, and the sensory areas with which they are linked, must be precise.

To illustrate, 2 cases which have lately come to my knowledge may be quoted. The one occurred in military, the other in civil work.

L/C H M M H Sustained gunshot wounds in various localities. The more important of these were dealt with *secundum artem*. One, comparatively trivial, was in the right cheek. Here a piece of shell had entered and was removed by the stretcher bearer who brought him in. The wound suppurated for a few days. No facial paralysis or even paresis resulted, and the wound, being satisfactorily healed, was ignored. The other day, in the course of routine inspection, he complained of twitching of the muscles of the right side of the face.

the nose, was somewhat sensitive. He complained

ruled out of account the question of foreign body being present. The explanation of his disability is,

two sensory nerves (1) the twigs from the infra-orbital branch of the maxillary division of the

trigeminal, (2) the buccinator branch of the man-

conjunctiva, and this reflexly has induced increased secretion of the right lacrimal gland along with motor irritability of the facial muscles which are closely associated with the trigeminal sensory distribution.

this measure is precisely the same as that in virtue of which one divides muscles in cases of spasmodic torticollis.

In order to meet the heightened conjunctival irritability, it was not thought advisable to excise the scar involving the infra-orbital branches, on account of interference with sensation of the right side of the face. Accordingly, a trial was made of the use of tinted glasses, the lenses being of large size in order to minimize the influence of sunshine and wind. Up to the present the result has been quite satisfactory.

The second case, H. R., age 38, came to me in September, 1919, complaining of weakness of the left hand. This weakness had been present for 6 or 7 months and was gradually increasing. He had had no accident, and no injury to the back, left shoulder region, or left upper limb. His occupation was that of a butcher. Investigation of the detail of his work gave a clue to the cause of the weakness.

Examination of the left hand showed no atrophy of the thenar or hypothenar eminence, and no loss of sensibility in any area. A tender spot was present about the center of the left palm, just distal to the proximal transverse crease.

An X-ray was taken. This showed no abnormal shadow. The electrical reactions of the muscles of the hand were also taken. These showed a normal response both to faradism and galvanism in all the small muscles of the hand. There was, however, distinct atrophy of all the interossei, and when full extension of the hand was attempted, some hyper-extension was noted at the metacarpophalangeal joints, along with less complete extension than normal of the two distal phalanges, this condition being more distinct in the little and ring fingers.



John B. Thompson

BLASTOMYCOSIS

WITH REPORT OF A CASE DYING FROM ABSCESS OF THE BRAIN¹

BY JOHN T. MOORE, A M, M D, F A C S, HOUSTON, TEXAS

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KNOWLEDGE concerning blastomycosis does not seem to be as complete as its importance would suggest. A large percentage of the surgeons with whom I have talked regarding the subject have not seen a case. Although the literature on blastomycosis has grown to be rather extensive, Warbasse's recent *System of Surgery* dismisses the subject with less than eight lines. Bevan, of Chicago, who has seen a number of cases suffering from the disease, devotes a number of pages to its discussion in Lever and Bevan's *Textbook of Surgery*. Their article is a most excellent one, the best I have seen in a surgical textbook. The textbooks on diseases of the skin give good descriptions of the cutaneous lesions, but little is said of the more important phases of the disease, i. e., the systemic involvement of the various organs of the body. Practically any or all the organs may become involved.

Many instances of failure to make a diagnosis are found in practice. This is probably due to our failure to keep in mind that this disease is not so uncommon and that it can and does involve tissues and organs other than the skin and often produces lesions similar to tuberculosis, syphilis, and other systemic diseases. The disease is an important one from both a medical and surgical point of view, as it fre-

at first local in the skin becomes systemic and usually fatal.

It is generally accepted now that the organism first described by T. C. Gilchrist (1), of Johns Hopkins Hospital, is the pathogenic agent in both the local skin lesions as well as in the various systemic forms of the disease. Gilchrist, it seems, presented his report of a

hospital Reports, in 1896. The disease at that time was regarded as entirely a local one; hence the name blastomycetic dermatitis.

There are now in the literature quite a number of systemic cases, the first one being reported by Busse and Buschke (2). The name has consequently been changed from that of blastomycetic dermatitis to blastomycosis of whatever organ it may involve, systemic and local.

Many writers speak of it as the "Chicago disease" on account of the large number of cases reported from there. I am inclined to think, however, that as a knowledge of this disease grows it will become more widespread in its distribution. In fact this has already happened for cases are being reported from all parts of this country and also from the foreign countries.

There is no need for me to go into a description of the organism, as there is available a number of well written articles by authors who can do the subject far better justice than I. No one seems to have presented much of importance about the organism since Gilchrist's classical paper in 1896.

The source of infection is still an unsolved problem. Evans (3) has reported a case of infection through a punctured wound.

Montgomery (4), in an analysis of 44 systemic cases, shows that 42 of these had an involvement of the lung. The frequency of lung infection has led to the idea that the lung is a common avenue of entrance. Others have suggested the intestinal tract as the avenue. The tongue (5) has been shown to be the primary seat of the trouble. A general lymphatic distribution of the organism has been shown by LeCount (6).

I have read of one case that seems to have received the infection through an injury by scratching the leg against a barbed wire fence.

A case reported in a personal communication by M. B. Stokes, Houston, followed a

¹Read at the meeting of the Southern Surgical Association, New Orleans, December 16, 17, 18, 1919

but when carefully considered tended to simplicity and to easy and ready remembrance. Of his other surgical work and of his high minded endeavor to seek for and to secure the purity and advancement of his own profession I need say nothing. It is a record of sincere and honest devotion to his duty as he saw it before him. Great deeds are born of great zeal and high resolve; and he was lacking in neither. All that he did is within the recent memory of his colleagues here. My immediate purpose has been fulfilled if I have sketched, however roughly, the giant figure of the man and the surgeon whose work was done among you and whose fame has spread out into all lands. Our calling by common consent, the noblest of any, dignifies all who join its ranks. The honor of the profession is the cumulative honor of all who both in days gone by and in our own time have worthily and honestly labored in it. In every generation there are a chosen happy few who shed a special lustre upon it by their character, their scientific attainments, or the great glory of their record of service to their fellow men; for it is, as Ambrose Paré said, "beautiful and the best of all things to work for the relief and cure of suffering." In our generation Murphy was one who by his full devotion, his complete surrender to its ideals, and by his loyal, earnest, and unceasing work, added distinction to our profession, which, in return, showered upon him the rewards with which no

others can compare, the approbation of his fellow workers and the friendship and trust of the best among his contemporaries in every country.

"The mightier man, the mightier is the thing
That makes him honoured."

As we look backward upon the long history of the science and art of medicine, we seem to see a great procession of famous and heroic figures, each one standing not only as a witness of his own authentic achievements, but also as a symbol, of the traditions, ideals, and aims, of the age which he adorns. The procession is sometimes thinly stretched out, or even rudely broken here and there; but, in happier ages it is thronged by an eager and exultant crowd. In medicine the whole pageant is as noble and splendid as in any of the sciences or arts, and it reveals the collective and continuous genius of a band of men inspired by the loftiest purpose, and lavish in labor and sacrifice for the welfare of mankind. They have come throughout the ages from every land. They now belong not to one country but to every country for they are the common possession and the pride of all the world. They have lost their nationality in death. They are men whose deeds will not be forgotten, and whose names will live to all generations. Among such men, few in numbers, supreme in achievement, John Benjamin Murphy is worthy to take his place.

showed no mastoid involvement, nor any involvement of eye, ear, nose, or throat

On November 26, 1918, Dr Foster asked me to take charge of the case. At this time there appeared to be three distinct abscesses or gummata, one just above and behind the left ear, another just in front and a little above the ear, while the third

upon pressure, but were rather firm to the touch.

Underneath the pus and cheesy contents of the abscesses was some necrotic and granular material, which being curetted away left a bleeding surface. After curetting these wounds they were swabbed with strong tincture of iodine and packed with iodoform gauze for 24 hours. Upon removing the packing Dakin's tubes were introduced and Carrel-Dakin's solution used, for 3 or 4 days. After the wounds appeared clean, alcohol dressings were applied. The patient was put upon potassium iodide as first advised by Bevan, and the dose increased up

was given the X-ray treatment by B. T. Vanzant and in the course of 60 days, the wounds appeared to be practically healed.

It was observed that at about the center of each

The patient was kept in the hospital from December 6, 1918, to January 16, 1919. He was carefully fed and in every way thoroughly treated. When he left the hospital we felt pretty sure that he was safely on the road to recovery.

The X-ray treatments had darkened the skin as from sunburn, and the tissues seemed thoroughly healed, although there was evidence of considerable fibrous tissue at the sites of the healed abscesses. The fibrosis seemed a favorable condition to prevent further spread.

He continued to do very well until about June, 1919, when there appeared evidence of involvement of the tissues in the orbit just above the left eye. A good oculist was consulted, and the abscesses

opened and syringed out with sulphate of copper solution 1 per cent.

The eyeball gradually began to bulge forward notwithstanding the drainage of the lesions in the upper lids seemed free. From time to time the removal of the eye was discussed but nothing was done until September 9, 1919, when the eye was enucleated, with the following comments of the oculist, Dr Wallace Ralston:

"On or about August 1, 1919, the left eye showed signs of being pushed forward—exophthalmos. There were noted two discharging sinuses of the upper lid, one about the middle of the lid under the orbital eminence and the other just outside the outer canthus. These openings led to a point about 1 inch in depth where they came together. This protrusion of the eyeball gradually became more pronounced until the lids could not cover the eyeball. The conjunctiva of this eye became very chemotic, irritated, and angry in appearance. The

eye was very much restricted, being almost fixed

enucleated. A large mass, the size of an eye, about 1 inch in diameter, very hard, was found deep in the orbit on the temporal side. Feeling that this must be a very tense abscess or cyst, scissors were used in opening it. A large quantity of pus was evacuated. The tumor, of course, collapsed."

The patient was allowed to leave the hospital 3 days after the enucleation of the eye. He was feeling very well though he had become somewhat emaciated. On the 16th a small abscess about the left frontal eminence was opened and much pus of a foul nature evacuated.

On September 17, 1919, he was sent back to the hospital on account of a convulsive seizure. When seen in the hospital he presented nothing very different from a patient who had had an attack of epilepsy. We suspected cerebral involvement, feeling that the pus drained away came through the skull. The reflexes were normal and no evidence of involvement of cranial nerves appeared. The convulsions which were partially Jacksonian in type continued, four on the 18th, two on the 23rd, and twelve on the 24th. Paralysis of the right arm and leg and partial paralysis of the face developed on September 27. Death occurred on October 12, 1919.

LABORATORY REPORT AND POSTMORTEM REPORT BY DR. M. A. WOOD, CASE G. W.

Blood. The Wassermann test was negative on November 26, 1918 (Dr. E. F. Cooke), and again on December 9, 1918 (Dr. M. A. Wood).

Fig. 1. Line of incision.

continuing to overpower the external pterygoid cause the proximal fragment to travel forward until its anterior margin, or perhaps its lower end lodges against the upper jaw or even against the under aspect of the malar.

This may lead to mal-union, vicious union, or even to non-union and, therefore, the surgeon seeks to overcome it at its earliest beginning. Of course, it goes without saying that all fractures of the ramus are not followed by such displacement.

As said before, when the fragment is long, the line of fracture being low or through the body, all that is needed to secure retention is to apply a molded "saddle" against the anterior margin of the ramus and fix this "saddle" to either upper or lower teeth and close the jaws. Any dentist can make such apparatus, and in passing I wish to say that no surgeon who has the best welfare of the patient at heart will try to carry such a case through without the aid of the dental colleague. However, when the fracture is higher up no "saddle" can be applied. When the mucosa in the region of the fracture is much lacerated, the "saddle" causes too much



Fig. 2. The proximal fragment is drawn forward by the pull of the temporal muscle, etc.

discomfort, and also its presence interferes with healing of the soft parts.

In such cases resort has been had to open operation and wiring or plating. This, however, is an operation of some magnitude, and it has been followed by serious consequences, and even by death.

Pickerill devised a scheme for the easy control of the fragment. It consisted in driving a screw through the zygoma so as to catch the underlying coronoid and pass through it while an assistant held the fragment in reduction. I tried the method once and did not find it quite so satisfactory as Mr. Pickerill does inasmuch as in that case, as very often happens, the coronoid did not extend up high enough to be caught by the screw. I have a friend who not being able to get the screw to "fix" in the coronoid was forced to wire the process to the zygoma. In both this and the method of Pickerill, there is more work than there is in the method I advocate, and the operation is more serious.

I thought that perhaps a nail passed close to the under border of the zygoma and close in front of the neck of the condyle would serve the purpose, I tried it once but it failed. I then tried passing the nail (ordinary wire nail about an inch and one-half long) close

from the urine or sputum, nor did we succeed in getting a culture from the blood.

5 The infection of the brain was possibly through the ophthalmic vein or through the veins of the scalp and emissary vein through the skull

6 The study of the organisms in the different lesions and tissues showed a considerable variation in their size; those from the abscesses of the face, neck, and orbit, showing the large forms, while no large forms could be found either in the pus or the tissue from the brain

7. There are many budding forms of the organisms, but no evidence of endospore formation, as in coccidioides

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SUBPHRENIC ABSCESS

REPORT OF A CASE WITH CURE¹

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IF we accept the definition of Barnard (1), that "any localized collection of pus which is in contact with the under surface of the diaphragm is a subphrenic abscess," the definition must also include localized hepatic abscesses which may have extended up to the diaphragm. In a series of 890 cases collected by Piquand (2) in 1908, 28 per cent followed gastric and duodenal ulcers and 21 per cent appendicitis; 15 per cent were associated with the liver and biliary passages, six per cent with intestinal diseases; and the remaining 3 per cent with various conditions. Of Barnard's series of 76 cases collected from the London Hospital, gastric and duodenal ulcers were responsible for one-third of the cases (34 per cent), appendicitis for one-sixth (15 per cent), tropical and hydatid diseases of the liver for one-sixth (17 per cent); the remaining were distributed among rare conditions, such as cancer of the pancreas, pyosalpinx, splenic infarct, gall-stones, etc.

From a review of the literature since 1908, appendicitis as the cause of subphrenic abscess appears to assume the principal etiologic rôle. This view was vigorously suggested by Heflinger (3) in 1912.

Subphrenic abscesses are apparently not so common today as formerly. The improvement in diagnostic skill, and the almost universal employment of the roentgen-ray for thoracic and abdominal diagnosis, together with the realization of what clinical diseases may be complicated by a subphrenic abscess, have apparently rendered this condition an uncommon occurrence today. Nevertheless, as the development of this condition is regarded by some as the result of carelessness, this fact may explain to a certain extent the infrequency of reports on the subject during the past 10 years. In the present paper we desire to report the case of a patient who developed a subphrenic abscess while under our care, showing that such a condition may occur even under hospital supervision; secondly, the case is worthy of record in view

tions of subphrenic abscesses containing gas are very rare. He found but one illustration and that in Case's *Stereoroentgenography of the Alimentary Tract*. He, himself, gives the roentgenological findings in a case of pyo-

¹From the Surgical Service of the Hebrew Hospital, Baltimore

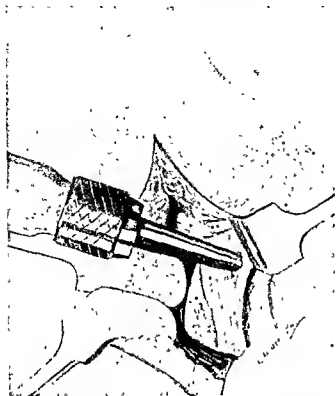


Fig. 5. The fragment is held in reduction while a hole is drilled through the coronoid just below the zygoma.

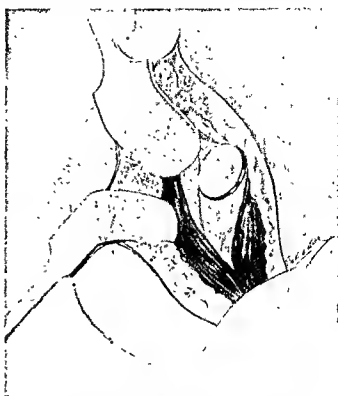


Fig. 6. The nail is passed straight in through the hole until its head impinges on the outer surface of the zygoma.

with figure-of-8 silkworm-gut through the masseteric edges and overlying structures. These control any oozing and there is no need of burying either ligature or suture material.

The jaw is then immobilized and for this kind of fracture I always use "closed bite."

The nail is removed after 4 weeks and comes away very easily. Some granulation tissue has always been present in the parts surround-

ing the nail and twice some brownish fluid has been found. The cultures have always been negative. A patient on whom I did a bone graft, wore the nail for more than 2 months without ill effect. This nail had been tinned for me by Captain (later Major) Lankford, D. C. A silver nail would be better perhaps but the ordinary wire nail is the only kind I have used.

tion of gas was present. The lateral position showed a distinct fluid level below the diaphragm with gas above, extending from the eighth rib to a point on a level with the outer end of the twelfth rib. There was a pronounced area of inflammatory reaction at the base of the right lung. The liver was not displaced downward. (Fig. 1.)

The clinical evidence and roentgenological findings warranted the diagnosis of a right subphrenic abscess, a left-sided central pneumonia, and rupture of the abscess into a bronchus.

On October 6, 1919, the twelfth rib was resected posteriorly and the diaphragm punctured without opening into the pleural cavity. About a gallon of foul-smelling pus was obtained. Drainage consisted of two iodoform drains and two rubber tubes. A culture of the pus obtained subsequently showed *haecilius coli*.

Improvement was rapid. The fetid expectoration disappeared immediately. The temperature and pulse began to approach a normal level. Two weeks after the operation, the pulse and temperature were normal.

A roentgenogram (7125, October 23, 1919) showed the drainage tube in place (Fig. 2), and the diaphragm reaching to the lower border of the seventh rib. The general distribution of the gas was confined to a lateral pocket between the chest wall and the surface of the liver. The pulmonary infiltration had decreased appreciably.

The pulse and temperature were within normal limits for the next 3 weeks. When the patient left the hospital, on November 16, 1919, the abdominal and the thoracic wounds had closed. On discharge the patient had lost his former cachectic appearance and gained 12 pounds.

A roentgenogram (7400) on January 13, 1920, three months after the last operation, showed the diaphragm at the normal level at the tenth rib. The air-pocket had entirely disappeared and the liver occupied the normal position. The plate showed a three-quarter inch resection of the twelfth rib.

Today (February 1, 1920) the patient is in excellent health and has returned to school.

The three series of roentgenograms were very instructive. In Figure 1, the diaphragm is at the level of the seventh rib, below which gases are seen in the dorsal position with a marked fluid level, with the patient lying on his side. At the base of the right lung, an area of inflammatory reaction is seen, a condition said by some to be associated constantly with subphrenic abscess. The patient was too ill to be fluoroscoped. Three months later, the air-pocket had disappeared, the diaphragm had resumed its normal position and the lung had apparently cleared up.

It is well to call attention to the advisability of taking lateral plates with the affected side up in patients too ill to stand, with plate behind and tube in front, just as is done in determining fluid levels in pulmonary abscesses.

HISTORY OF SUBPHRENIC ABSCESS

The history of subphrenic abscess supplies an interesting phase in medical literature. It has been divided into three periods: In the *first period* up to 1845, the cases were diagnosed only at necropsy. The descriptions of Ferrus (5, 1824), Louis (6, 1826), Cruveilhier (7, 1832), belong to this period. In the *second period* we find clinical observations. It was Barlow (8), in 1845, who was the first to make the diagnosis clinically and it was he who pointed out the differences between pleurisy and subphrenic abscess. To Eisenlohr (9, 1879), after Barlow, belongs the credit of making the diagnosis. In the *third period* we come to the era of surgical intervention. It begins with Debove and Rémond's (10) *Mémoires*, which appeared in 1890 and in which the authors describe a case which had been previously correctly diagnosed and which was treated by incision and drainage. Maydl's (11) work also belongs to the early surgical period.

ANATOMY

Four intraperitoneal and two extraperitoneal spaces are recognized:

Intraperitoneal	Right	<	Anterior
			Posterior
Left	<	Anterior	
			Posterior
Extraperitoneal	Right		
	Left		

The falciform ligament divides the subphrenic space into two parts, a right and a left. Each of these is subdivided into a larger anterior and a smaller posterior part by the corresponding lateral ligament, thus constituting the four intraperitoneal subphrenic spaces. The right extraperitoneal space lies between the layers of the coronary ligament, and the left extraperitoneal space around the upper end of the left kidney in the perinephritic spaces. Pus may collect in any of these spaces and with signs --

1. Between the upper surface of the right



99.

the canal after the corpus has been amputated is probably the most serviceable treatment. The actual cautery is, of course, thorough but less convenient.

The methods of approximating the cut surfaces of the cervix and adjusting their peritoneal edges differ but little; all serve equally well if the sutures are placed deep and are

sufficient in number to prevent hæmorrhage. The aims should be in approximating these surfaces, exact apposition, insurance against hæmorrhage and economy of both time and material. My preferred plan is to use four or five interrupted plain catgut sutures No. 2; the outer two sutures 18 inches or more in length are tied so as to leave one strand

PATHOLOGY

Various explanations for the collecting of pus beneath the diaphragm have been advanced. The most prominent are the following: (1) Suction action of the thorax during respiration, (2) the lymph circulation from the peritoneal to the pleural cavities through the stomata of the diaphragm; (3) gravitation. This is now the most accepted view. As the patient lies on his back, the kidney and the thick lumbar muscles produce a mound between the subphrenic space and Douglas's pouch in the female and the rectovesical pouch in the male. Pus gravitates to the two depressions produced by this elevation.

In appendicitis, the subphrenic space may be infected in the following ways: (1) as a part of general peritonitis—rare; (2) by slow extension from the pelvis up the lumbar peritoneal fosse, (3) through the portal vein, as a pyelephlebitis, (4) by lymphatic extension (a) up the right retroperitoneal cellular tissue, (b) up the lymphatics, round the deep epigastric artery to the falciform ligament.

Infection by the peritoneal route produces intraperitoneal abscesses; by the cellular tissues, extraperitoneal abscesses; by the lymphatic route, both types.

Abscesses may contain pus or pus and gas. In some unusual cases, bile, fecal and alimentary contents, echinococcus hooklets and pancreatic juice have been found. Various organisms have been isolated from the abscesses. *Bacillus coli* has been the most frequent, streptococcus, pneumococcus, staphylococcus less commonly, and anaerobes rarely.

Pus and gas in a subphrenic abscess (the pyopneumothorax subphrenicus of Leyden) occur in about 25 per cent of the cases. In a few cases abscesses have contained nothing but gas (Gruneisen, 12). The consensus of authorities is that the gas in a subphrenic abscess may originate in any one of these ways: (1) from the intestine, (2) from the lungs, (3) spontaneously.

When of intestinal or gastric origin, the gas in a subdiaphragmatic abscess is due to the perforation of a hollow viscus belonging to the gastro-intestinal tract. When of pulmonary origin, the abscess communicates

with the outer world by rupturing into a bronchus. This is what happened in our case, and the rupture into the bronchus was followed by the expectoration of foul colon pus. In some cases, the presence of gas cannot be explained as arising from gastric, intestinal, or pulmonary sources, and must be regarded as of spontaneous origin. It is true that perforation of the gastro-intestinal tract may have occurred and later cicatrized, a fact which has been proved at autopsy, but in most cases of so-called spontaneous formation of gas, fermentation processes are no doubt responsible. It is a well known fact that anaerobes produce gas in tissues; Legros (13, 1904) has shown that some aerobes possess the same property, and Umber (14) has isolated a fermenting organism in a subphrenic abscess.

SYMPTOMS

1. *History.* The onset of a subphrenic abscess may be acute or insidious. Eisendrath reports a case in which the signs appeared 1 year after an appendectomy. This, however, is unusual, as most of the cases following appendectomy occur during or soon after convalescence. In the acute types, the recognition of a subphrenic abscess may be made simultaneously with the diagnosis of acute appendicitis or may be the first suggestion of the existence of a more or less long standing gastric or duodenal ulcer.

2. *General signs and symptoms of abscess.*

and a polymorphonuclear leucocytosis

3. *Abdominal signs.* Often a tumor in the hypocondrium or in the epigastric region and even in the lumbar regions may be found with the various types of subphrenic abscesses. Owing to the formation of adhesions, these masses may be immovable. When gas is present, the liver dullness may be obliterated and be replaced by tympany. In many cases, it may be difficult to differentiate subphrenic abscess from general peritonitis, particularly when pain, vomiting and meteorism are prominent symptoms.

4. *Thoracic symptoms and signs.* These are the most common. As a rule signs of pulmonary compression are present. Consolida-

forming a supravaginal hysterectomy: first, the anchoring of these ligaments to the cervical stump; second, their treatment independently of the cervical stump.

Those who advocate the first plan do so with the idea of maintaining the cervix in its normal position or correcting its displacement if such exists. Those who advocate the second plan believe that the action of the round and broad ligaments on the cervix when so anchored is practically negative and therefore a useless procedure.

Those who advocate the anchoring of the ligaments must differ in their theory of uterine support from those who advocate their independent treatment. The first act upon the theory that the uterus is directly supported and maintained in normal position by the combined influence of the fascial diaphragm and the round and broad ligaments, or by the action of the round and broad ligaments alone. The second believe that the fascial diaphragm alone supports the uterus and that the round and broad ligaments act only on specific occasions as when the bladder is being emptied; and that these ligaments in combination with the tissues in which the cervix is embedded restore the fundus to its normal position below the symphysis.

In combating the claim of those who advocate the anchoring of the round and broad ligaments to the cervical stump, it is necessary to consider briefly first the mechanics of uterine support and the normal function of the round and broad ligament as I conceive them to be.

The primary support of the uterus is the fasciomuscular diaphragm of the pelvis in which the lower segment of the uterus is embedded. This diaphragm consists of all the fascial and muscular structure which separate the urethra and bladder from the vagina, the tissues at the base of the broad ligaments, and those radiating from the cervix to the sacrum. These tissues act conjointly to support the uterus and maintain the cervix in normal position, and any interference with their conjoint action tends to produce a forward displacement of the cervix or prolapse of the entire uterus. The round and broad ligaments are called into action when

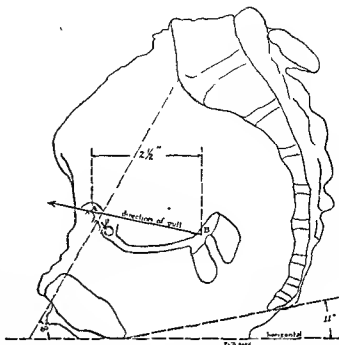


Fig. 1. A schematic diagram based on the preceding

position is maintained

Second, if the anchored ligaments exert an influence on the normally posed cervix sufficient to overcome the resistance of the fasciomuscular structures, then the direction of this influence is from the coccyx and toward the symphysis

Third, if the anchored round ligaments exert an influence on the position of the cervical stump, they do so when the fasciomuscular tissues are lessened in resistance as when injured or overstretched. Under these combined influences the cervix must move toward the symphysis through an arc of a circle.

the corpus recedes, as when the bladder fills, or when some force tends to displace the corpus laterally. Of these lateral ligaments, the round is perhaps the most important. Its structure is in part muscular as likewise is its function. When the bladder fills and the corpus recedes toward the sacrum, these ligaments are stretched until a degree of tension has been reached, which awakens consciousness of discomfort. When the bladder is being evacuated these ligaments act conjointly with the elastic tissues in which the cervix is embedded and restore the corpus to an anterior position. When the corpus has advanced sufficiently anterior to permit the

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2. *General signs and symptoms* of suppuration are often present. These include pyrexia, tachycardia and anemia, emaciation, chills, and a polymorphonuclear leucocytosis.

3. *Abdominal signs.* Often a tumor in the hypochondrium or in the epigastric region and even in the lumbar regions may be found with the various types of subphrenic abscesses. Owing to the formation of adhesions, these masses may be immovable. When gas is present, the liver dullness may be obliterated and be replaced by tympany. In many cases, it may be difficult to differentiate subphrenic abscess from general peritonitis, particularly when pain, vomiting and meteorism are prominent symptoms.

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in not a single instance was the cervix found prolapsed after operation. In 3 cases, the cervix following operation was found prolapsed with considerable relaxation of the anterior vaginal wall. In each instance, however, the conditions existed prior to operation; 2 of these cases were operated upon a second time, the cervix in each instance was removed, and the fascia of the anterior wall lapped; results in these cases were successful; the third case is awaiting operation. It is true that these clinic cases have been followed less than 3 years and may be considered as proving little. However, in reviewing the histories of my private cases, extending over many years, the results have been similar to those found in the follow-up cases.

If intra-abdominal anchoring of the ligaments to the cervix prevents or corrects prolapse of the cervix, as claimed by its advocates, it would seem logical to conclude that when performing complete hysterectomy, vaginally or abdominally, for the correction of procidentia uteri, the implantation of the ligaments in the vaginal vault would be alone sufficient to correct prolapse of the vaginal walls; if this were so, the problem of cure of procidentia would be simple. It is a fact, however, becoming well recognized, that the problem will never be solved by the utilization of these ligaments as essential factors, but only by a proper readjustment of the tissues of the pelvic diaphragm.

Finally, how should the cervix be treated, if at the time of a supravaginal hysterectomy it is found displaced? If its displacement is not serious, the fascial tissues posterior to the cervix may be anchored to the cervix so as to pull the cervix back in the direction of the coccyx; but if there exists a serious injury to the pelvic fascial diaphragm and the cervix is in marked descent, amputation of the corpus should be done without consideration of the cervix, and at the subsequent time a vaginal operation performed to remove the cervix, narrow and lap the pelvic fascia.

CONCLUSIONS

1. If the action of the round ligaments, when these ligaments are anchored to the cervical stump, effects a change in the position

of the cervix, then this change of position must be toward the symphysis and from the coccyx, and as the normal position of the cervix is in the immediate region of the coccyx, any marked change of its position toward the symphysis constitutes a displacement.

2. If, when the round ligaments are anchored to the normally posed cervix, the position of the cervix after operation is found maintained, it is proof that the anchored round ligaments have had no influence upon the position of the cervix, as the direction of this influence, if any, must be toward the symphysis.

3. A normal fascial diaphragm maintains independently the cervix in a normal position.

pelvic diaphragm is normal.

4. If the posterior area of the fascial diaphragm is stretched by a retroposed corpus or tumor in the cul-de-sac of Douglas so as to advance the cervix toward the symphysis, shortening of the uterosacral or posterior ligaments is a more logical procedure than anchoring of the round ligaments to the cervical stump.

5. If the entire fascial diaphragm has been injured sufficiently to permit of the cervix advancing and descending toward the vulva and an intra-abdominal removal of the corpus is deemed advisable, then the corpus should be removed without reference to the position of the cervix and the prolapse of the cervix with the vaginal vault corrected subsequently by lapping the fascia of the anterior vaginal wall.

6. No adequate proof has yet been offered to show that the influence of the round ligaments, when anchored to the cervix, enters as a factor, in the slightest degree, in maintaining the normal position of the cervix nor in restoring a displaced cervix to normal.

7. Prolapse of the cervix does not and can not occur after supravaginal hysterectomy, if previous to the operation the fascial diaphragm is uninjured and the cervix is in normal position.

sleep is a good preparation for exhaustion. Here in many cases analgesia is demanded and its proper administration is of great value. It can be said that the woman will be prepared for labor in proportion as she has avoided toxæmia in her pregnancy and has practiced well regulated exercise in the open air. With this background if sleep is denied her during the first stage she rightly demands relief.

It is evident that the merit of the so-called twilight sleep lay in the psychic control of the patient and in the hypodermatic use of morphia. While the former is difficult at times outside of hospital, the hypodermatic use of morphine, preferably with atropin, is usually possible. With unruptured membranes there is little evidence that this injures the fœtus, nor does it seriously delay labor. In the presence of nausea a drug hypodermatically given is promptly and efficiently absorbed. Dissolved in various forms it tends to promote dilatation of the cervix and the combination is a reliable and efficient one. The proven objections to scopolamine or hyoscine are the uncertainty of action which may become exciting and its uncertain influence upon the fœtus. In our experience a moderate dose of morphine and atropin has never acted unfavorably upon the child. In one case of excessive nervousness with tedious dilatation of the os and cervix in a neurotic multipara suffering with a mild bronchitis, the hypodermatic use of codein through two nights and three days seemed to produce a condition of mild asphyxia in the child. This, however, did not prove serious and the child was readily made breathe. In cases where patients are admitted to hospital threatened with rupture of the uterus through impacted fœtus and violent uterine contractions, the hypodermatic use of morphia may be necessary until operation can be performed. We have as yet seen no positive evidence that such use of morphine injured the child.

Formerly hydrate of chloral was used with great freedom during the first stage of labor. Some applied it locally upon cotton to the cervix as it was supposed to have a peculiar property in promoting dilatation. When

the dangerously depressant effects of this substance became familiarly known its use was greatly curtailed.

During the second stage of labor we believe that an opportunity should be given for the patient to establish the normal physiology of the expulsive operation of parturition. This consists in muscular contraction reaching the crest of its wave energy, followed by a gradual cessation and relaxation, and this to be succeeded by a period of absolute rest and often sleep. If the pulse and pulse tension of the patient undergoing this phenomenon be observed they are found to be surprisingly normal. There is no evidence of exhaustion and it is questionable whether it is well seriously to disturb this condition by anaesthesia. There can be no objection to brief anaesthesia at the point of greatest muscular activity provided the conditions are such that the patient if it were necessary could be promptly delivered. If, however, the conditions are unfavorable for prompt delivery through the vagina, the patient may insist upon anaesthesia and abandon all efforts to help herself in labor.

Pressure upon the pelvic floor is painful in proportion to the lack of development of the genital tract, the size and consistence of the presenting part, its position and presentation, and the condition of the nervous system of the patient. Unquestionably at this stage of labor, anaesthesia should be available and usually employed. Here those who urge the use of nitrous oxid and oxygen believe it to be a specific. Our experience, however, has not led us to subscribe to this somewhat enthusiastic claim. In our experience nitrous oxid and oxygen is not a true stimulant, but is an anæsthetic and asphyxiating agent. Its merit consists in its easy inhalation, its comparative safety, the prompt recovery of the patient. It does not lessen the vigor of uterine contraction, nor does it seriously affect the fœtus. Nor is it a stimulus of muscular and nervous action. In some patients it produces a condition of excitement which is undesirable and it cannot be trusted if the anaesthesia is to be carried to the surgical degree for forceps, version, or embryotomy. With a preliminary hypodermatic injection of morphine, it may

The oldest patient was 71. She had a scirrhus carcinoma. One benign tumor, neurofibroma, occurred in a woman of 60. The youngest patient with a benign tumor was a female, age 22. In 885 cases of tumor of the breast, Bloodgood¹ found only one cancer occurring in a patient under 25. This patient was 21. Thompson² removed an adenocarcinoma from the left breast of an 11-year-old girl. Battle and Maburg (*loc. cit.*) report an epithelioma of the nipple of a girl of 11. Brewer (*loc. cit.*), of New York, removed from the breast of a 16-year-old negress an intracanalicular adenopapilloma undergoing malignant transformation. So far as I have been able to learn the above are the only cases reported in as young a patient as mine. Thirty-three of the women had nursed children and of these, 25 had malignant tumor. Of the forty-two women who had tumors of the breast and who had not nursed children, only nineteen had malignant tumors. Fifty-seven of these patients were married. The important point in the history of a woman with tumor of the breast is not whether she is married or unmarried, but whether she has ever been pregnant and especially whether she has nursed children or not. It does seem from my experience, and this experience I think accords with that of other surgeons, that nursing is one of the causes of cancer of the breast, and, on the other hand, that the married state in and of itself may not be said to be in any sense a cause of cancer of the breast. It is because and only because the married state increases the incidence of pregnancy that it may be said to be a contributing factor in the production of cancer of the breast.

Of the women over 15 years of age in my state (Indiana), 65 per cent are either married, widowed, or divorced. In my series of cases, 76 per cent of the malignant tumors of the breast occurred in married women and the same percentage of cases occurred in women who had nursed children, while only 24 per cent occurred in single women and 43 per cent in women who had not nursed children. It will be noticed also that in this series of

cases, 9 followed infection and 7, injury of the breast. Taking all the facts into consideration, it seems that we are forced to the conclusion that the changes in the breast incident to pregnancy enhance the likelihood of the occurrence of cancer and that, if there is added to these changes, additional sources of irritation, etc., which come from nursing, the likelihood of the occurrence of cancer will be still further increased. I am forced by the facts to disagree with Deaver when he says:³ "Married women are proportionately less liable to develop cancer of the breast than unmarried women."

In 49 malignant cases in this report, there were 9 cases in which there was a history of preceding infection of the breast, and seven cases in which there was history of an injury. In this connection, the case of Mrs. H. T. is of particular interest.

She came to me 34 years after having had an abscess of the breast, which abscess was lanced. Immediately following the lancing of the abscess, a lump appeared and remained. I found that she had a scirrhus carcinoma of the breast, involving the axillary glands. A radical operation was done in 1913. Three years later a recurrent nodule was removed. This spring she reports herself in good health, but says she has had an irritating skin disease on her arm ever since the operation. There is no return of the cancer.

Concerning the character of the operations done in these cases, we find that in 9 the tumor only was excised. There was a return of the trouble in one of these patients 6 years later, at which time a radical operation was done. The woman is now (4 years later) well, with no sign of a recurrence. It might be well to add that this recurrence was at the site of the previous operation, which was in the anterior axillary line, and was noted about one and one-half or two years before she came to consult me about it. The reason for doing a simple excision in this case was because of the fact that the woman reported that the trouble commenced with a red spot on the skin, which had followed the grippe and which appeared about a year prior to her visit to me, and because on examination I concluded that the trouble was probably infectious in character. A frozen section was

¹Binnie, *Regional Surgery*, vol. 1, p. 558.

²Deaver and McFarland, *Anomalies and Diseases of the Breast*, p. 574.

³*Anomalies and Diseases of the Breast*, p. 574.

chloroform as an anæsthetic in many cases of labor. Acute acidosis, acetonæmia, acetonuria, relaxation of the uterus, postpartum hæmorrhage, have all followed the use of this anæsthetic. At one time considered the ideal anæsthetic for obstetrical use, it is now in this country less and less frequently employed. Diluting with cologne of good quality makes it an exceedingly agreeable mixture for the patient, but uncertain in action and of doubtful value. In the experience of the writer the combination of oxygen and ether has proven remarkably successful in parturient women suffering from cardiac, respiratory, or nephritic conditions which formerly demanded the use of chloroform. The writer has recently had occasion to operate upon a number of tuberculous women in various stages of pulmonary tuberculosis, and has employed this anæsthetic with little irritation and good after-results. In one consumptive woman whose case was complicated by valvular disease of the heart, abdominal section proceeded smoothly and the patient made an uninterrupted recovery. It is the practice of the writer to require the administration of oxygen with ether in all obstetrical operations.

The subject of analgesia and anæsthesia in labor is so intimately a part of modern obstetrical science that it may not be amiss to call attention to the fact that modern obstetrical diagnosis has considerably limited the indiscriminate and dangerous use of anæsthetics during labor. Formerly prolongation of labor was considered a valid indication for analgesia and anæsthesia, but in some of these cases accurate diagnosis was wanting. The patient with a contracted pelvis and disproportion might be drugged for several nights and days in the belief that labor must ultimately proceed successfully. Finally, the discovery would be made that a radical operation was necessary, after the patient is brought to face this problem injured by indiscriminate analgesia and anæsthesia to which she had been subjected. So the indiscriminate use of drugs in labor in patients whose toxæmia had not been recognized has added numerous fatalities. We are quite aware of the danger of the indiscriminate use of drugs, such as ergot and pituitrin,

especially where no accurate diagnosis of the conditions present has been made. But is there not an equal danger in the indiscriminate use of drugs to produce analgesia and anæsthesia when an accurate diagnosis of the obstetrical conditions is wanting?

In the matter of diagnosis nitrous oxid and oxygen may be exceedingly valuable. For thorough examination of nervous patients, for minor manipulations or the introduction or removal of gauze packing, or the opening of a breast abscess, or for other possible conditions where a brief and not complete anæsthesia is necessary, nitrous oxid and oxygen may be of great value. In inducing labor the writer is accustomed to employ these agents, thus enabling him to dilate the cervix somewhat with the gloved hand, to separate the membranes from the lower portion of the uterus and to introduce from one to three bougies without resistance and suffering upon the part of the patient.

The subject of analgesia and anæsthesia is of peculiar value to the obstetrician, but in the consideration of anæsthesia he shares with the surgeon the study of modern conditions. Unquestionably the administration of anæsthesia is properly today a specialty of surgery in all its branches. The modern anæsthetizer should be prepared to use nitrous oxid and oxygen, ether and oxygen, chloroform with or without oxygen, changing if necessary from one to other of these during a prolonged operation. In special fields of surgery the invention of special apparatus has made anæsthesia vastly more accurate and successful. In obstetrical anæsthesia we believe that the mother is of too much importance to be given to the average trained nurse, or average hospital resident, and that even in spontaneous parturition the services of a skilled anæsthetist should be demanded. The remarkable success of women trained for this purpose introduces into obstetrical practice an element which is agreeable to the patient and of great value to the physician. The patients should be assured when they engage their physician that especial attention will be given to the lessening of suffering and the avoidance of nervous exhaustion. They should be promised such relief as modern

ever, it does emphasize the fact that not all nodes in the axilla of a patient with breast cancer are cancerous. It should be said in this connection that all of the patients were benefited by the operation, including even those who later died of the trouble. In my opinion the benefit derived from the operation on these late cases was in a material measure mental; that is to say, the knowledge that the growth was removed gave them mental relief for a time, though later there was a return.

"It has been well established," says Benedict¹ "that heredity plays no notable part in cancer." I cannot subscribe to this opinion. While I have not gone over all my cancer cases with a view to a study of this question of heredity, I have a very strong impression from my experience with cancer in general that we are at present underestimating the importance of the part which heredity plays in the production of cancer. The following is one of the most impressive cases that have come under my observation:

Miss M. T. R., age 43, single, physician, was operated upon by me, in 1913, for cancer of the uterus. Her family history is as follows: Mother died of cancer of the rectum. Two brothers died of cancer, one of the cæcum and one of the rectum. One maternal aunt died of cancer of the uterus, one maternal uncle died of cancer of the rectum, one maternal great-aunt died of abdominal cancer; one maternal great-uncle died of cancer of the colon; one maternal second cousin died of cancer of the stomach and another of cancer of the bowel; another maternal second cousin was recently operated upon for a cancer of the uterus.

The experiments made at Harvard with mice seem to show that in those animals one can breed either immunity or susceptibility. Moreover, it is illogical to assume that heredity plays an insignificant part in the production of cancer in man in the light of the well-established facts concerning the breeding of form, color, and character in the lower animals.

In a paper read before this body seven years ago² I said: "All demonstrable cancers require radical removal." My opinion in this regard has been changed. I do not think it advisable to remove the breast muscles and

axillary glands in very early cancers wherein the pathology seems distinctly circumscribed. In cases of this kind I have for several years contented myself with removal of the whole mammary gland. These cases are probably those that MacCarty puts in the class of secondary cytoplasia. He says:³ "At the time of preliminary investigation I had confidence in the old criterion for histological malignancy which utilizes the basement membrane (*membrana propria*) as the line of demarcation between a malignant and a benign condition; the cells of secondary cytoplasia are within the histological bounds of benignancy despite the fact that they are morphologically identical with those of carcinoma. From a clinical or practical standpoint, I have been convinced that all mammary gland-bearing tissue presenting such a picture should be removed, leaving, perhaps, the pectoral muscles and axillary lymphatic glands. I have not felt justified in advising the removal of the breast, muscles, and axillary glands by means of a radical operation. Rules have been established on this basis and subsequent postoperative histories have justified, so far, the legitimacy of such a conservative operation."

Regarding the particular type of operation done, whether radical operation or simple excision, it is better to choose the operation to fit the case than to make the case fit the operation.

In closing let me say that our only hope of improving the results in the treatment of cancer lies in earlier operation. In the Baltimore clinic, according to Bloodgood⁴ the proportion of benign to malignant tumors of the breast has increased 27 per cent in the last 27 years. Bloodgood accounts for this fact on the ground that the public and the profession are better educated as to the importance of early removal of tumors. It is quite generally conceded, I think, that surgeons see these cases much earlier on the average now than in former years. That this is true is due in no small measure to the efforts of the American Society for Control of Cancer. This society should receive the hearty cooperation of the whole medical profession.

¹Am. J. M. Sc., 1910, civli, 740.

²Tr. Am. Ass. Obst. & Gynec., 1912, xxv, 222.

³Am. J. M. Sc., 1910, civu, 663.

⁴Binnie, Treatise on Regional Surgery, p. 561.

is made the mortality in this disease has greatly diminished. From clinical experience, not laboratory, we have learned, therefore, that since the cases that will get well without operation cannot safely be selected, the best results in appendicitis are secured by early operation in every case.

Analogously, since we cannot select the cases of septic abortion for a specific therapy, is it better to curette or to treat expectantly? Granting that some will die regardless of treatment and that some are worse off if curetted and others if let alone, will a greater number receive harm by being curetted or by being let alone? This question can best be answered by clinical experience with the means of diagnosis at hand at present, and is one of the problems discussed in this paper.

As might be expected the staff of the Cook County Hospital has for years had among its members exponents of both methods of practice, and I believe still has, and for the purpose of comparing results of the two methods in this hospital, a study was made of 200 cases of septic abortion taken as they appeared in the files.

All of the 200 cases had a temperature of 100° F or more on the day of admission. They are divided into a group of 100, in which the uterus was emptied artificially, during the febrile period and as soon as convenient after admission, and a similar group of 100, in which there was no local treatment. The essential features are noted in Tables I and II.

TABLE I

	Curetted Cases	No Local Treatment
Number of cases	100	100
Total days of fever	810	350
Average days of fever	8.10	3.50
Total days in hospital	1335	815
Average days in hospital	13.35	8.15
Complications	19	4
Deaths	3	1
Percentage mortality	3	1

TABLE II—COMPLICATIONS

Curetted Cases		No Local Treatment	
Type	No	Type	No
Sepsis	9	Pelvic abscess	1
Parametritis	3	Sepsis and parametritis	1
Phlebitis	1	Salpingitis	1
Pelvic cellulitis	1	Cellulitis of leg	1
Endometritis	1		
Peritonitis	1		
Salpingitis	1		
Hæmorrhage	1		
Total	19	Total	4

The tables are self-explanatory and show strikingly that the cases with no local treatment (conservative) had fewer days of fever, a shorter stay in the hospital, fewer complications and a lower mortality.

Bearing in mind these very definite conclusions for the series of septic cases, I decided to run a second series of so-called non-septic cases to compare the results of active and expectant treatment in fever-free cases. The plan of procedure will be briefly explained.

The first premise was that all septic cases should be treated expectantly until fever-free. Only in the case of alarming hæmorrhage, dangerous to life, should the uterus be emptied artificially of secundines. *In the septic case no operative procedure should be carried out until the patient has been 5 days fever-free,*—at which time such a case was regarded as a non-septic case. If such patients are septic, at least they enjoy an immunity which our clinical experience seems to show permits them to be curetted with impunity and with a

ward by 6 months' observation. At first curettage was done after 3 days of normal temperature but in not a few cases there was an alarming postoperative rise in temperature and the patient's stay in the hospital was prolonged. Experimentation with longer and shorter periods of normal temperature in cases that had been septic showed that the five-day limit was the earliest in which uniformly good results could be obtained. The premise, mentioned above, of treating all septic cases expectantly until fever-free, was of course based upon the conclusions drawn from the 200 septic cases previously analyzed.

Our further procedure follows. Cases were assigned alternately to the operative and expectant treatment lists, when the diagnosis of abortion was made. *Cases on the operative list* were curetted when there was profuse or persistent bleeding or when it was very evident by examination that placental tissue was retained. If the bloody discharge ceased and it was evident that the uterus was empty and abortion complete, cases on the operative lists were not curetted and notations were



Fig. 1 Case 1. Showing scar on cheek.



Fig. 2. Case 2. Showing location of tender spot.



Fig. 3. Case 2.

The appearance of the hand was that of the typical ulnar nerve lesion, though not in pronounced degree.

Though his occupation was given as that of a butcher, one discovered that he was in the employment of a large meat-packing house, and that his work consisted in skinning animals. In this work the hide was grasped firmly with the left hand, while cutting strokes were made with the right. This work involved the skinning of over one hundred animals per day. The weakness of the hand was observed about one month after he had commenced this work. What had happened here was that the deep branch of the ulnar nerve, traversing the palm of the hand from ulnar side to radial just proximal to the heads of the metacarpals, was the seat of a traumatic neuritis, the result of direct pressure. Recommendation was made that this form of work cease immediately and that as soon as the local tenderness had subsided, massage of the hand with mild faradism of the affected muscles be instituted. After a few weeks of treatment the patient was sent to the headquarters.

The patient was seen in 1920. The atrophy was still present to some extent, and the weakness of the hand was still there in small degree, although the measure of recovery was considerable. Had treatment been persisted in, one has little hesitation in saying that by now the hand would have been practically well.

Thinking that this case was not likely to be unique, I communicated with the meat-packing concern, asking if similar cases had occurred. Their reply is subjoined:

Replying to your inquiry of the 19th inst., in reference to Mr. H. R., who was suffering from a condition of the left hand. This is the only case of its kind we have ever had to deal with, and the nature of the case is such that it leads us to believe that it was not the result of work he was doing, and the trouble no doubt dates back of the time when he was employed by us.

There have been a good many men performing the same work that Mr. R did, none of whom suffered from the same condition, making this case an interesting one to us, as it is the first case of its kind which has come to our attention.

It will be seen that the writer of the letter does not support my diagnosis, but no alternative is offered, and I do not see that an alternative is possible.

The chief interest of these two cases lies in the fact that they introduce an element of exact anatomical knowledge, which is too often lacking in the surgeon's equipment a defect which, even in these times, is sometimes proclaimed as a virtue.

TABLE VII.—TEMPERATURE ON ADMISSION

	To 98.5	98.8 to 100	100 and above	Total
Active List	20	14	21	55
Expectant List	27	21	17	67
Total	47	37	38	122
Percentage	38.54	30.32	31.14	

We note that 61.46 per cent of the cases entered the hospital with a temperature above 98.8° F. The percentage of admissions with a temperature above 100° F., presumably with infected uterine contents, was 31.14.

Of the 55 cases on the operative list, 9 were not curetted (16.36 per cent), 2 were too septic, dying respectively on the second and fourteenth days after admission; 7 had no discharge after the fifth day and the uterus was evidently empty.

Of the 67 cases on the expectant list 27 or 40.29 per cent were curetted because of profuse or persistent bleeding, persistent lochia rubra, or subinvolution of the uterus.

Five septic cases that were discharged not curetted returned because of the resumption of hemorrhage. They were then curetted and did not return again.

TABLE VIII.—TOTAL DAYS OF TEMPERATURE—ACTIVE LIST

	Non-Curetted Cases	Curetted Cases	Total	Average
Number of Cases	0	46	55	
Days of Temperature Total	80	175	244	2.61
Days Temp before Operation	—	80	—	1.74
Days of Temp after Operation	—	35	—	0.76
Average days of temperature of the 9 non-curetted cases				3.22

EXPECTANT LIST

No.	Days of Temperature	Average
27	Curetted Cases	46 1.70
40	Expectant Cases	107 2.67
67	Total	153 2.28

We note that there was no marked difference in the average total days of temperature

of the cases on the active and expectant lists, the former being slightly in excess (2.61:2.28). However, it is interesting to observe that the expectantly-treated cases in each group had a longer course of fever, thus:

Active list

Curetted cases 2.49

Expectant cases 3.22

Expectant list—

Curetted cases 1.70

Expectant cases 2.93

Of the 122 cases in the series 78 or 64 per cent had fever at some time during their hospital course, the proportion being greater on the active list (41 of 55—expectant list 37 of 67).

The effect of curettage on temperature is given in Table IX.

TABLE IX.—EFFECT OF CURETTAGE—ACTIVE LIST

Cases with fever before operation	20	Cases with no fever before operation	27	Total
Number that developed fever after operation	12	Number that developed fever after operation	1	13
Average number days	2.05	Average number days	1.61	
Percentage	41.37	Percentage	17.61	
Number that did not develop fever after operation	8	Number that did not develop fever after operation	26	34
Percentage	29.73	Percentage	82.39	51
Average number of days of fever for the entire group			0.76	46

The figures indicate that there was a tendency on the part of the patients who had fever before operation to have fever after operation in excess of those who were fever-free before operation. There also was a slight increase in the average number of days of fever in those with pre-operative temperature.

The days of lochia rubra as observed in the hospital are given in Table X.

TABLE X.—LOCHIA RUBRA—ACTIVE LIST

No.	Days of Lochia Rubra	Average
9	Non Curetted Cases	57 5.77
46	Curetted Cases	217 4.71
55	Total	274 5.00

EXPECTANT LIST

No.	Days of Lochia Rubra	Average
27	Curetted Cases	108 7.33
40	Expectant Cases	271 6.77
67	Total	379 6.50

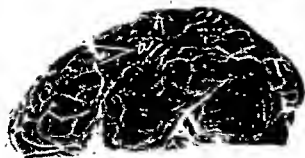


Fig. 1. Photograph of brain showing opening of abscesses at *a*.

burn on the hands and wrists. Eighteen days afterward a peculiar papillomatous eruption appeared and upon examination blastomycetes were found; hence this case seems to have been infected in some way following the burn.

Our case became infected through the mouth, apparently. The trouble began in a lower wisdom tooth. It is interesting to note that the patient had the habit of keeping a splinter of some kind in his mouth. The history is as follows:

CASE 1. No. 2364. G. W., age 17, school boy, born in Texas, referred to me by John H. Foster, November 26, 1918, for what was diagnosed as necrosis of bone in the left temporal region. The patient was a well developed, muscular young man, weighing 156 pounds, and 5 feet 9 inches tall. His color was good, and he did not look very sick.

Family history. The mother and three brothers are living and in good health. The father died of paralysis at the age of 40, when the patient was a boy of 9. The following history of the father was obtained:

Grant W., age 40, carpenter and farmer, born in Illinois, height 5 feet 8 inches, weight 160 pounds. Moderate habits. He was healthy up to the time of last illness with the exception of one spell of malarial fever 10 years previous to last illness. He was taken down with chills and fevers—pains in back and lower limbs. He was treated for malaria 2 weeks. He went to Hot Springs, Arkansas, but hot baths made him feel worse. One week after he began taking baths, the right leg from hip to foot became paralyzed, the paralysis coming on suddenly; the next day the left limb was affected, and he suffered from complete paralysis from the waist down. Prior to the paralysis he had had considerable pain in the back with occasional spells of nausea and vomiting, chills and fever every day, sometimes several chills a day. The fever would go very high. There was no pain or nausea after paralysis set in. The man died *one week* after the



Fig. 2. Section through brain showing two large abscesses, *a* and *b*.

first attack of paralysis, May, 1919. He had lost considerable weight during his illness.

tobacco or alcoholic liquors of any kind. He says that he has a habit of holding a splinter or stick of some kind in his mouth. He is neat and clean in his habits. He studies hard and stands well with his classmates.

Previous diseases He had measles and whooping cough when a child. He had pneumonia at the age of 7. He was well and vigorous up to the time of present trouble.

Present disease. On August 9, 1978, the trouble began in the left lower jaw in the region of the wisdom tooth. He thought he had toothache and consulted a dentist, who told him that as soon as the tooth got through the gums he would be all right. The pain gradually extended to the entire left side of the face. The dentist claimed that there was inflammation about the wisdom tooth and advised hot applications to the side of the face. The jaws began to get stiff and he could only partly open the mouth.

The latter part of September, the dentist forcibly opened his mouth and extracted the left lower wisdom tooth, which tooth was found not diseased. The pain and swelling in the face and side of the head continued. The area above the left ear became more swollen than the other parts of the face. This swelling was lanced by a doctor on October 1, but he got only bloody serum, no pus. The pain grew more severe and the doctor advised his return to Houston where he arrived about November 15, 1918.

As the patient continued to grow worse he consulted J. H. Foster, a specialist on the ear, nose and throat.

Dr. Foster had a Wassermann made, but the reaction was negative. The X-ray and other studies

PREGNANCY COMPLICATED BY INFLUENZA¹

By SAMUEL A. DURR, M D, CHICAGO

DURING the recent recurrence of the influenza epidemic, there were 53 cases of acute epidemic respiratory infection among the pregnant women in Cook County Hospital. These cases, together with a similar but larger group reported by W. J. Woolston and D. O. Conley, form the basis of this paper.

They reported 101 cases observed in the same hospital, during the preceding year. In their group, 52 or 51.4 per cent died, and 75 per cent of the patients who died, suffered an interruption of pregnancy, either abortion, premature labor, or labor at term. The incidence of abortion among those who recovered was 42 per cent, somewhat less than in the cases who died, but still considerably larger than we have observed this year. In their group, no effort was made to classify the patients as to whether or not there were any signs of pneumonia complicating the influenza.

We observed two distinct types of cases: first, those of uncomplicated influenza, the clinical picture of which is so familiar as to need no elaboration; and, second, influenza complicated by pneumonia. Cases presenting typical physical signs of pulmonary consolidation, with leucocytosis and fast pulse, instead of leucopenia and slow pulse, as in typical influenza, together with marked dyspnea, cyanosis, and often hæmoptysis, were considered influenza complicated by bronchopneumonia. The division into two clinical groups was made because of the marked difference in mortality and morbidity they showed.

Among the 21 cases of influenza, there was only one death, which gave a maternal mortality of 4.7 per cent. The patient, a quintipara, delivered a normal baby at full term, and in fairly good condition. She was extremely toxic, and possibly for that reason, labor seemed to be painless, and extremely rapid. Following delivery, her temperature rose to 105°, and she died a few hours later.

None of the other cases suffered an interruption of pregnancy, and all of them recovered completely, without complications.

Thirty-two of the patients had influenza complicated by bronchopneumonia, and in this group the results were very much worse. Twenty-six, or 81.2 per cent, died, and 7, or 21.9 per cent, delivered either at term or prematurely. Three of the patients delivered babies of over 7 months' gestation, and all of these children lived. Only one of the mothers of living children recovered; the other two succumbed several days after parturition. Complications observed were 2 cases of suppurative pleuritis, 1 of otitis media, and 1 of femoral thrombosis.

The mortality for both groups was 50.9 per cent, which is practically the same as in the preceding year (51.4 per cent). The incidence of abortion was much lower, being only 15 per cent, as compared to 60 per cent in the Woolston and Conley report. This may be explained by the fact that the patients more fully appreciated the gravity of their condition, and came to the hospital earlier in the course of the disease. In this connection it might be added that only 4 cases of pneumonia developed in the hospital, the other 28 having had unmistakable evidence of pulmonary consolidation on entrance.

The cause of abortion is purely speculative. It might be due to foetal death, which in turn could be caused by direct infection of the placenta and foetus, by toxæmia, or by insufficient available oxygen in the maternal blood. The last two might conceivably cause strong enough contractions of the uterus to expel the products of conception, before the foetus died. It is more than probable that continued exertion on the part of the mother, such as coughing, is of some importance. In a post-mortem examination of a still-born foetus, there were no gross or microscopic evidences of direct infection, either in the placenta or the foetus. A postmortem cesarean section was done by D. S. Hillis upon a woman who

¹ Read before the Chicago Gynecological Society, April 23, 1920. (For discussion, see p. 631.)

Blood cultures were made on December 9, 1918, and were sterile after 2 weeks.

A blood count made September 24, 1919, showed white blood cells, 40,000, polymorphonuclears, 94 per cent, small mononuclears, 6 per cent, large mononuclears, 0; eosinophiles, 0; basophiles, 0.

Urinary examination made at various times showed no abnormality. December 6, 1918, examination of pus from the lesions on the side of face showed blastomycetes of varying sizes, large and small, with some budding forms. Examinations made April 11, 23, and May 27, 1919, of the pus from these lesions always showed similar variations in size and character of the organisms.

The eye. In the abscess in the orbit posterior to the eye, after the eye was removed, were found many large sized blastomycetes. These large blastomycetes were contrasted particularly with the small size of those found in the pus from the abscesses of the brain. No other organisms were found in the pus from the deep orbital abscess, or from the brain abscesses.

The brain and membranes. Sections from the dura mater through one of the thickened portions show, on the meningeal surface, an extensive round-cell infiltration with proliferation of the endothelial cells and connective-tissue cells and formation of giant cells. No blastomycetic organisms were seen. The proliferation of connective-tissue cells extends throughout the entire layer of the dura.

Sections of brain tissue on the edge of the abscesses show, first, a zone of necrotic material, next a zone in which polynuclears, eosinophiles, and connective-tissue cells predominate. Beyond this zone, small round cells and connective-tissue cells are more prominent. No giant cells are seen. Some small blastomycetic organisms are seen in these sections.

Postmortem, October 12, 1919, on head of case of blastomycosis. External appearance: The skin on the side of the face was of a dark red color, rather contracted at various sites of old healed openings. The skin is smooth between the healed lesions. There was noted one opening through skull about 1 inch back of the left frontal eminence. There is another opening near the lower end of the left coronal suture, also an opening through the left orbit at the left and above the outer canthus. Practically all of the upper part of the left temporal muscle has been destroyed.

The anterior one-third of the left side of the skull presented a worm-eaten appearance on the under surface with three openings as mentioned. An exostosis of the skull was seen on the outside near the left orbit. The dura is thickened in patches over the anterior half on the left side and also along the falx cerebri. The outer surface of the left cerebral hemisphere exudes pus from two openings into deeper tissues. An exudate was seen covering the anterior half of the temporal lobe, the central portion of the parietal lobe, some small patches over frontal lobe, and areas along intercerebral fissure.

The vessels of both hemispheres were full of blood.

Sections through the brain show an abscess cavity 3.4 centimeters by 2.5 centimeters in the center of the frontal lobe, and extending to within 2.5 centimeters of the under surface of the frontal lobe, and communicating with the upper surface through an opening in the mediofrontal gyrus about 1 centimeter from the fissure of Rolando or central fissure.

A second abscess cavity is shown separated from the first by a narrow zone of brain tissue 0.3 centimeter wide. This abscess measures 2.8 centimeters by 2.1 centimeters, is oval-shaped and extends downward for about the same distance as the first abscess, its upper margin being about 1.2 centimeters below the surface of the brain. The whole cavity lies under the central portion of the fissure of Rolando. No external communication had been made by this abscess.

Behind and to the outer side of the second abscess cavity was a third abscess separated by a narrow zone of brain tissue 0.2 centimeter wide, irregular in shape, about 3.7 centimeters long, and $\frac{1}{2}$ centimeter at its widest part, and with a communication of the surface just posterior to the fissure of Rolando, and about 2 centimeters above the junction of the Rolandic and Sylvian fissures. This abscess extended to about the same distance from the under surface as the others. Cross sections caught all three abscesses at about the same level on their under surfaces.

A further abscess cavity is seen on the mesial aspect occupying the central portion of the superofrontal gyre, only a thin wall of brain tissue separating it from the exterior. This cavity measures 1.8 centimeters by 1.7 centimeters by 1.8 centimeters.

CONCLUSION

1. The infection in this case was probably introduced through the mouth from the splinters habitually carried in the mouth.
2. The treatment of the case was hardly radical enough in destroying the various recurring foci of the disease.
3. The eye should have been sacrificed earlier, and radium used in the orbit as the X-ray was apparently the best agent used in the treating of the lesions on the face and neck.
4. The disease remained more or less local for a long time notwithstanding its tendency to spread through the lymphatics and become systemic. No organisms were obtained either

posteriorly without any peritoneal covering. The relation between bowel and peritoneum is identical to that found in the lumbar region of both ascending and descending colon, where it is possible to do a colostomy without entering the peritoneal cavity. It does not resemble the condition found when the completely covered sigmoid, freely movable on its mesentery, drops into a hernial sac.

In one case of right sided hernia, Case 5, we found an abnormal type of fused cæcum and appendix which had been dragged down into the posterior wall of the hernial sac. The cæcum normally develops as a pouching or budding outward of the colon, and has no mesentery nor direct attachment to the abdominal wall. But the size, relations, and position of the cæcum are subject to considerable variations. In position it may be arrested at any point along the course of its development and rotation, having been found frequently high up under the liver and rarely as far around as to be under the spleen (2). Likewise excessive rotation and development carries it entirely beyond the pelvic brim producing an excessively mobile cæcum floating in the pelvis. This latter type of cæcum is a fairly frequent content of hernia but does not occupy a parasaccular or sliding position.

The relation of the cæcum is also affected by the extent to which the fusion continues between the posterior leaf of the mesocolon and the abdominal wall. This fusion normally ceases one-half inch above the ileocecal junction. In this case the fusion had continued abnormally low, to within an inch of the head of the cæcum and likewise along the meso-appendix and appendix for two-thirds of its length, so that these structures were without peritoneal covering except in front. In this condition they were herniated through the inguinal canal with the sac lying entirely anterior. The sac was opened and some adherent omentum easily separated and reduced. The posterior sac wall, including the cæcum and appendix and continuous with the parietal peritoneum, was dissected up from the underlying muscles and fascia. The appendix was dissected out and excised. The freed cæcum was then replaced within the abdomen and the peritoneum reduced to

normal position and the redundant portion trimmed away and sutured. The inguinal region was then repaired by modified Bassini technique, and the patient left the hospital in good condition.

Moschowitz, in discussing these herniae, describes two varieties: one in which the fused cæcum is dragged downward by the attached peritoneum as it descends into the posterior wall of the sac; another, a more rare variety, also described by Tuffier as *hernia en bascule*, in which the fused or uncovered portion of the cæcum lies over or adjacent to the internal ring. This retroperitoneal part is then forced into the inguinal canal, and as it goes through, it is stripped of its peritoneum entirely just as a glove would be turned and stripped from the hand. In such cases there would be no peritoneal sac at all, and the authors have stated that it is rather difficult to find and identify the various anatomic tissues and structures involved.

It is generally conceded that these parasaccular and extrasaccular conditions in hernia are at least in part due to a sliding downward of these fused portions of the large bowel. The explanation of the condition is simplified if we remember that the descent of the testis is in reality a sliding hernia which occurs as a normal condition. The testis originates in the genital ridge mesial to the wolffian body in a retroperitoneal position. In the later foetal months, it descends and herniates through the inguinal space or canal, accompanied by a peritoneal process or sac known as the vaginal or funicular sac. Dr. White tells me that this sac precedes the testis. However, it lies entirely in front of the testis, gradually surrounding it somewhat latterly to form the tunica vaginalis.

If we substitute for the testis in this picture the fused or partially retroperitoneal portions of the colon, it will well represent the conditions found in the sliding herniae of the large bowel, which likewise herniates through the abdominal wall with a peritoneal pouch in front of it. In two cases of sliding hernia of the bladder, approximately three-quarters of an inch of bladder wall had been dragged down by the attached peritoneum into the mesial wall of the hernial sac.



Fig. 1. Shows fluid level below the diaphragm with gas formation above. High position of diaphragm.



Fig. 2 Shows air pocket persisting Drainage tube in place. High position of diaphragm

pneumothorax subphrenicus dexter, and adds several excellent illustrations.

CASE 1. September 11, 1919. Admitted to the Hebrew Hospital L. P., age 13 years. The family and personal history were unimportant.

Present Illness. Ten days before admission, the patient had been taken acutely ill with generalized abdominal pain which, after 2 days, had become localized in the right lower quadrant. He had vomited several times. On admission we found a bulging mass in the mid-line, extending from the umbilicus to the symphysis pubis. Rigidity and tenderness were present over the lower abdomen. Over this mass the percussion note was flat. Catheterization of the bladder had no effect on the size of the tumor. The white blood count was 22,300 with 90 per cent polymorphonuclear neutrophils. The catheterized specimen of urine showed a trace of albumin and an occasional leucocyte. The temperature on admission was 101°F.

Operation. Having made a mid-line incision extending from the umbilicus to the symphysis pubis,

spite of free drainage, the temperature continued elevated, varying from normal to 103°F. One drain was removed on September 19 and another on October 2, being replaced by a gauze tip. On October 3, 1919, there was a leucocytosis of 9,000 with 70 per cent polymorphonuclears (3 weeks after the operation). On October 5, the temperature rose from 101° to 104°F., the patient became toxic, and the respirations were 40 to the minute associated with a pulse of 140 to the minute. At this time the patient developed a slight cough with expectoration of a moderate amount of pus having a colon odor. Examination showed the right thorax bulging, with tympany over the liver area. Posteriorly, the percussion note was flat toward the base and on auscultation the breath sounds were almost suppressed over this area, with a suggestion of egophony above the area of impairment. The heart was not displaced. There was now a leucocytosis of 12,500. By exploratory puncture, pus was obtained in the sixth and ninth interspaces in the scapular line. This pus had the same colon odor as the expectoration. A roentgenogram (7058) of the chest showed marked hilus thickening with extension into the middle of the left lung. There seemed to be some rotary displacement of the heart and of the large vessels toward the left. In the anteroposterior position, the diaphragm reached to the seventh interspace on the right and beneath it an accumula-

were placed down to the stump and two down into the pelvis. Tier closure was made with catgut. In



Fig 2 Abnormal fusion of cæcum and appendix to posterior abdominal wall, with sliding hernia Case No 5

fixation extends from the iliocecal region upward to the point where the transverse colon crosses the duodenum. Very frequently the fixation extends downward affecting the cæcum and appendix. On the left side, this fusion extends from the splenic flexure to the iliopectineal line. The atrophy and degeneration of these layers leaves then, over this area, only a single layer of peritoneum which represents the anterior leaf of the original mesocolon. Beneath this in the areolar tissue separating it from the abdominal wall are situated the nerve and blood supply to the colon, which had also been carried along in the original mesentery by the growth and rotation of the bowel.

The position and relation of these nerves and vessels are of the utmost importance in cases where the fused colon and its anterior layer of peritoneum are forced down into the hernia, as these nerves and vessels are carried along between the colon and the mesial wall of the sac. They are certain to be seriously torn by extensive attempts to free the sac from the fused viscera, and cases are reported (4) in which such damage resulted in fecal fistula and recurrence of the hernia. In other

instances, it has been necessary to resect the involved portion of the bowel (5).

However, these nerves and vessels can be readily stripped up from the posterior abdominal wall along with the large bowel and the posterior part of the sac. This stripping or dissection may be carried upward beneath the peritoneum for any desired distance and the bowel with its unharmed nerve and blood supply and with the mesial layer of peritoneum may be replaced within the abdomen.

The ordinary type of hernia in which the content becomes adherent to the sac, either by inflammation, pressure, trauma, or otherwise, may resemble the sliding types somewhat, but examination will reveal several distinct structural differences. Here the peritoneal layer or sac is continuous entirely around the adherent viscera. Separation of the adhesions is comparatively easy, and does not involve tearing the main nerve and vascular supply to the viscera. It is a condition in which a freely mobile segment, either small bowel, transverse colon, or sigmoid, swinging by a mesentery has become adherent after entering the sac.

In all the cases whose histories follow, we were able to dissect up the posterior part of the sac and parietal peritoneum with the attached viscera, from the underlying abdominal wall sufficiently to replace in approximately normal position without severe kinking. The redundant peritoneum is then excised and sutured; and the inguinal space repaired in the usual manner.

In two cases which were fairly extensive with considerable parasacculal bowel, it was found when the bowel was replaced that a large part of the sac was necessarily retracted along with it to be replaced on the posterior wall from which it had slid downward. This left but a small amount of redundant sac to be trimmed away.

The operation of splitting and reversing the sac to reconstruct a mesentery as has been advised by Weir (4), Walton (6), and others did not appear to be suited to the cases on which we tested it, as it produced in them a decided constriction and torsion of the blood supply.

lobe of the liver and the diaphragm, with the falciform ligament to the left and the coronary ligament posteriorly. In this variety of abscess, the liver becomes adherent to the diaphragm in front. Pus is localized at the upper and the posterior part of the recess; the diaphragm is pushed up giving signs of compression of the right lung. This is the type that usually follows appendicitis. Since the liver does not descend on account of adhesions, the right hypochondrium and the epigastric region are not tender.

2. The right posterior intraperitoneal subphrenic space is represented by the subhepatic pouch, a triangular space bounded laterally by the abdominal wall, in front by the liver and gall-bladder and posteriorly by the abdominal parietes with the apex at the upward slope of the left lobe of the liver. An abscess here will give a swelling in the right hypochondrium and occasionally in the right lumbar region. It is most often combined with other varieties of subphrenic abscesses.

3. The left anterior intraperitoneal space is the fossa bounded by the diaphragm above, the left lobe of the liver behind, the spleen to the left and the falciform ligament on the right. An abscess in this region is due usually to a perforated gastric ulcer. It produces a swelling in the epigastrium and the left hypochondrium with signs of compression of the left lung. This type of abscess always contains gas.

4. The left posterior intraperitoneal space is the lesser peritoneal cavity. Pus occupying the small space may give signs suggestive of a pancreatic cyst. An abscess here is a rarity.

5. The right extraperitoneal space lies between the layers of the coronary ligament of the liver. Infections from the right kidney, the posterior surface of the duodenum and a retrocaecal appendix may burrow along the space pushing the peritoneal reflexion of the liver further and further back and the liver lower and lower in the abdomen. The abscess may extend between the layers of the falciform ligament and point in the mid-line of the epigastrium; and may be incised without opening the peritoneal cavity. This type of subphrenic abscess is to be differentiated

from the right anterior intraperitoneal abscess where the liver cannot be pushed down owing to the formation of adhesions.

6. The left extraperitoneal space is situated in the retrocellular tissues of the left loin. Infection in this space arises from the left kidney, pancreas, descending colon, and lumbar glands. The abscess presents itself in the lumbar region. This type is rare.

For further data on the anatomy of the subphrenic space, the reader is referred to the article of Barnard, whose descriptions and illustrations are very instructive. Clinically, it is not often possible to determine which space the subphrenic abscess occupies, and in the literature no special stress is laid on its localization. From the fact that the symptoms in the case described here were mainly thoracic with no downward displacement of the liver, we believe that we were dealing with a right anterior subphrenic abscess. However, as a clinical basis, the classification of Piquand into (1) anterior inferior subphrenic abscesses mainly with abdominal signs; (2) superior subphrenic abscesses with thoracic symptoms; and (3) retroperitoneal abscesses with signs of lumbar swelling, is satisfactory. The case reported in this article probably belongs in the category of superior subphrenic abscesses with thoracic signs and symptoms.

In Piquand's series of 890 cases of subdiaphragmatic abscesses we have the following classification:

Right	Retroperitoneal	132
	Intraperitoneal	346
	Combined	19
Total		497
Left	Retroperitoneal	19
	Intraperitoneal	395
Total		324
Bilateral		28
Uncertain		41
Total		890

Right-sided abscesses are more common than left-sided, and the intraperitoneal types outnumber the extraperitoneal abscesses. Bilateral cases are not often seen. After appendicitis, the intraperitoneal variety is the more common.

Operation at the Methodist Hospital, Dr. Linhart assisting. A direct inguinal hernia, with sac very broad at base and practically no neck was found. A small, shriveled, fibrous appendix was removed through the incision. In isolating and examining the sac it was found to be unusually thick on its inner wall and quite fat. Examination continued within the peritoneal cavity revealed a pouch of

easily retained by truss. Right inguinal hernia of

replaced with its attached peritoneum and the opening sutured without removing any of the sac.

and aponeuroses were closed over it by modified Bassini technique. The patient suffered gas pains on the following day but thereafter his convalescence was uninterrupted. Examination on October 4 found condition excellent.

CASE 7 October 2, 1919. R. D., male, age 50. Left inguinal hernia 24 years. Moderate distress was sometimes noticed after standing for some time. Reduction was easy and his ability to retain the hernia by his own effort was remarkable, having passed several strict railroad examinations without detection of the hernia.

Operation at the County Hospital. An oblique hernia containing 15 inches of descending colon was found lying behind the sac. The technique used was similar to that used in the preceding cases. Condition 2 months later was excellent.

CASE 8 December 10, 1919 Ben S., male, age 62. Left inguinal hernia present 12 years and

through to the bladder. The sac was successfully trimmed away a full half inch from the pouch, and sutured. The bladder pouch was then inverted and repair finished by the Bassini technique. On the sixth night the patient had a nightmare, got out of bed and walked about the ward. However, he left the hospital in 3 weeks apparently cured.

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tion of lung tissue or an empyema may be associated with the subphrenic abscess. The heart may be displaced and even rotated. The signs vary in the abscesses with the presence or the absence of gas formation. In the presence of gas, areas of tympany which shift with position may be made out. Dyspnoea and cough are common symptoms and expectoration of fetid sputum may occur with rupture of the abscess into a large bronchus.

COMPLICATIONS

The complications may conveniently be divided into (A) thoracic and (B) abdominal.

A. Thoracic complications. 1. *Pleurisy* without perforation of the diaphragm may occur through the lymphatic anastomosis of the peritoneal and pleural cavities. The pleurisy may be fibrinous, serofibrinous and even purulent. It is now conceded that definite pneumonic patches lie just adjacent to a subphrenic abscess.

2. *Perforation of diaphragm.* In the retro-peritoneal abscess, the perforation occurs at the junction of the costal and lumbar fibers of the diaphragm whereas in the intra-peritoneal variety, its seat is usually in the center of the diaphragm. In size the perforation may vary from a pin-head to half a dollar. Although one perforation is generally present, more may occur.

3. *Rupture into the pleural cavity.* This event may lift up the parietal pleura so that it becomes fixed to the visceral pleura and the approximation of the two surfaces may act as a barrier against the spread of infection. Most frequently, however, pus escapes into the pleural cavity and the physical signs vary according as the pus is free or localized. When the abscess ruptures near the center of the diaphragm, adhesions occur between the parietal and visceral pleura and wall off the infection, but when it ruptures toward the periphery (costophrenic space) where the lungs descend only on deep inspiration, adhesions are not common and an empyema occurs.

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scuss; but in the presence of gas, the following zones are made out from above, down, with the patient in the sitting posture: (a) lung resonance, (b) dullness corresponding to the pleurisy, (c) tympany, gas of subphrenic abscess, (d) flatness, pus of subphrenic abscess.

4. *Rupture into the lung.* This may result in the formation of pneumonic patches, gangrene, or rupture into a bronchus, with expectoration of pus. If adhesions unite the diaphragm to the lung, the pus may escape directly into the lung without getting into the pleural cavity. If the abscess ruptures into a large bronchus, it may be completely evacuated, but this is rare.

5. *Pericardial complications.* These can be proven only by autopsy.

B. Abdominal complications. (Not so common as thoracic findings.)

1. *Peritonitis.* Rare. Usually the subphrenic abscess is secondary to a general peritonitis.

2. *Rupture into the alimentary tract.* Vomiting of pus makes the diagnosis. This is a fatal complication.

3. *Rupture into the bladder or ureter.* Also rare.

4. *Opening through the skin.* The fistula is usually in the right hypochondrium and most of the cases are associated with cholelithiasis and cholecystitis.

DIAGNOSIS

It is important to detect the presence of a subphrenic abscess in order to prevent the various complications detailed above and more particularly to prevent perforation of the diaphragm. A subphrenic abscess which has lifted up the diaphragm may be readily confused with empyema and the differential diagnosis is difficult. Litten's sign is unimportant, but it has been said to persist in subphrenic abscess and to disappear in empyema. Maydi maintained that the heart is displaced upward in subphrenic abscess and displaced to the right or to the left in pleural exudates. On percussion, except in the gaseous type, there is no differentiation possible between the impairment from the pleurisy and that from the subphrenic ab-

bile immediately following, it will show evidence of infection. We are too prone to look upon the common duct stone as completely obstructing the flow of bile, and this is rarely the case. When a stone engages in the common duct, the duct invariably dilates, and very soon this stone is floating in the stream—thereby allowing free drainage of bile. Persistent jaundice due to stone, occurs only when a large stone becomes engaged in the ampulla, or when many stones actually block the duct. Some of the cases with small stones in the common duct, are almost free from symptoms, and this has given rise to the name, "the silent common duct." The name is quite theatrical, but if one really *listens carefully, it is usually not silent*—merely indistinct.

In the treatment of these lesions it is difficult to lay down hard and fast rules, as so much depends upon our subsequent knowledge. For instance, if Rosenow's work proves to be correct, and I believe it will, that the infection is in the wall of the gall-bladder, and not confined to the mucous membrane, then the surgeons of the future will be compelled to do a cholecystectomy in nearly all cases of stones in the gall-bladder. When one sees at autopsy on a case of cholecystitis in an animal, the swollen oedematous gall-bladder, it is a revelation. It would seem as though the infection must have penetrated all coats of the gall-bladder. If this is correct, we cannot hope to cure the disease by drainage of the inside of the gall-bladder. I have no doubt that in most instances, after the stones have been removed and drainage instituted, the disease subsides, but the primary elements of infection still remain, the exciting cause of future stones. Again, if tying off the cystic duct acts in establishing a permanent drainage of the common duct, it means that even in common duct stones and in chronic pancreatitis, the operation of choice is cholecystectomy. Judd and Mann have done considerable work to ascertain the effect of tying off the cystic duct. The resistance of the valve of Oddi produces a dilatation of the common duct. This continues until the pressure of the small biliary radicals in the liver and that from the walls of the common duct, force the

valve to give way. When the pressure is finally equalized, there is more or less continuous flow of bile from the common duct into the duodenum. This is an exceedingly important point, and should actual experience show it to be clinically true, it will mean that cholecystectomy offers not only a more efficient method of drainage, but also gives us the added advantage of draining the bile into the duodenum, instead of into a bottle.

There can be no doubt that many cases are not relieved by simple drainage of the gall-bladder. Any one who has seen these cases reopened, and has seen the dense adhesions between the gall-bladder and surrounding structures, will wonder why more patients do not have pain. Temporary obstruction must occur, which prevents easy filling and emptying of the gall-bladder, and the failure of cholecystostomy permanently to relieve the patient is a problem which it is exceedingly important to settle. In my own series there were 15 cholecystostomies—4 originally operated upon by me, and 11 by other surgeons—that later necessitated cholecystectomy. Of these, 6 contained stones at the second operation, but as 2 of these had stones in the cystic duct, I am satisfied that they were overlooked at the previous operation. The remaining 4, however, were done by good men, and as the stones were in the gall-bladder, they must be considered as cases of true recurrence of stone. In one instance the patient was originally operated upon by one of the best men whom I know, and yet, 2 years later, I removed over two hundred stones from this patient's gall-bladder. These cases are almost invariably cured by cholecystectomy. The old operation of sewing the gall-bladder to the abdominal wall, certainly ought to be abandoned, and while properly invaginating the peritoneal coat and dropping the gall-bladder back into its normal position is less objectionable, in my hands it has not been nearly as successful in permanently relieving these patients, as cholecystectomy.

When a stone is lodged for any length of time in the cystic duct, its removal is followed by ulceration and contraction, and finally

tion of lung tissue or an empyema may be associated with the subphrenic abscess. The heart may be displaced and even rotated. The signs vary in the abscesses with the presence or the absence of gas formation. In the presence of gas, areas of tympany which shift with position may be made out. Dyspnoea and cough are common symptoms and expectoration of fetid sputum may occur with rupture of the abscess into a large bronchus.

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pancreas the mortality is 25 per cent. The case of spreading peritonitis was hardly chargeable to cholecystostomy, as the patient died from an already established peritonitis. The two other deaths were desperate cases and in any operative procedure, would probably have resulted in death.

In the 135 cholecystectomies there were 6 deaths. Two of these were due to perforation with walled off abscesses, but as stones were present in the cystic duct, cholecystectomy was imperative. Both of these cases died of pneumonia. Of the others, 1 death was due to pulmonary embolism, the patient dying on the twelfth day (autopsy). One developed intestinal obstruction on the seventeenth day, as she was ready to leave the hospital, but refused further operation. One died in 12 hours, with a very rapid pulse and oedema of the lungs. The abdominal wound was opened after death, but it revealed no cause of death, and a complete autopsy was not allowed. The last 1 died on the fifth day, cause of death unknown, as no autopsy was allowed, but death was probably due to peritonitis.

The mortality in operation upon the biliary tract is largely due to such complications as perforation with abscess, jaundice, and malignancy. If, for instance, we view these cases in another way, we find there were 106 cases where the disease was confined to the gall-bladder. In these, there were 4 deaths, a mortality of 2.0 per cent. In uncomplicated stone in the cystic duct there were 28 cases, with 1 death, or a mortality of 3.5 per cent. There were 20 cases of stone in the common duct, with 1 death, a mortality of 5 per cent. In perforation with spreading peritonitis and walled off abscess, there were 6 cases, with 2 deaths, the mortality jumping to 33½ per cent, while in cancer of the pancreas, the mortality was 50 per cent. This would seem to be a very appealing argument in favor of operation at a time when the disease is confined to the gall-bladder. A surgeon with a high percentage of cystic and common duct stones, is unfortunate in his medical friends, as they haven't learned the necessity of early operation, when the disease is limited to the gall-bladder. The gospel

of early operation in diseases of the biliary tract should be preached with the same enthusiasm as that which was formerly done in acute appendicitis.

While death from cancer, pneumonia, pulmonary embolism, angina pectoris, and intestinal obstruction, does not seem to be dependent upon operations on the bile

records are uncertain and more or less dependent upon how fortunate one is in escaping these bad pitfalls. For instance, in the last 53 cholecystectomies, there were no deaths, and while this is partially due to increased experience, it is also due to good fortune in escaping many of the complications mentioned above. In any large series of cases, however, these apparently unavoidable deaths do occur with definite regularity, and must be considered in accurately estimating the death rate.

While this experience is not large, it represents over 252 patients, all of whom have been pretty thoroughly studied. In spite of this, I hesitate to speak in a very positive manner regarding the two operations: cholecystostomy and cholecystectomy. There has been a good deal of misinformation written regarding both operations, and it has become a rather delicate subject. I realize cholecystostomy is probably safer in its immediate mortality, but it is not so safe when viewed from the ultimate cure of the patient. Yet, if it became general knowledge that cholecystectomy were the established procedure, I am fearful of the mortality in the hands of the inexperienced operator. Progress, however, can only be obtained by definitely establishing the truth, be the consequences what they may.

In the hands of the experienced operator, the mortality of cholecystectomy in uncomplicated cases ought not to exceed 2 per cent. I believe we have arrived at a point where the mortality in each of these procedures is sufficiently low, that the indications for each can be judged on its merit. It is no longer just to dismiss the subject by saying the mortality is too great in cholecystectomy.

be used for abdominal section. While the apparatus necessary for its administration is comparatively simple, it is more cumbersome and complex than the can of ether and the gauze or simple inhaler necessary for etherization. While we recognize fully the value of nitrous oxygen in labor, we should not be willing to keep a patient under its influence continuously for 5 or 6 hours, nor should we be willing to depend entirely upon it in all cases of parturition.

The best quality of ether skillfully administered is successful in the majority of cases of spontaneous labor during the second stage. If given at the height of the pain, and quickly removed so soon as the pain subsides, it stimulates and does not retard labor; but the moment when expulsion occurs a few deep inhalations without air will render the patient insensible to pain although capable of comprehending sensations of feeling, of hearing, or often of sight. The mother rouses easily after delivery and requires no anesthesia while the placenta is separating. For the insertion of stitches immediately after labor, ether properly administered with oxygen is comparatively safe and efficient. We have seen no evidence that such use during the stage of expulsion injures the foetus. It is true that ether is inflammable, that some patients are excited by it, that it is irritating to the bronchial tubes and kidneys, and that it is difficult to anesthetize some patients with ether, but if skillfully administered it is usually successful and its combination with oxygen renders it in our experience the safest of obstetrical anesthetics.

For the immediate closure of lacerations it must be remembered that all parts of the genital tract are not equally sensitive. There is not much sensation in the cervix, nor is there great sensitiveness in the pelvic floor. In the skin perineum, especially near the anus, the insertion of stitches causes acute pain. If these facts are borne in mind anesthesia may vary during the insertion of stitches in accordance with the needs of the patient.

The comparative merits of nitrous oxid and oxygen and ether and oxygen were strictly exemplified in a recent experience.

A multipara was suffering from an hepatic toxæmia. While her urine remained comparatively free from albumin and casts, the ammonia percentage was rising steadily and so was the percentage of creatin and creatinin and rest nitrogen. Vomiting was incessant and uncontrollable, the action of the heart was increasing in rapidity. As viability had been reached it was deemed necessary to induce labor and for this purpose it was suggested that to anesthetize her with nitrous oxid and oxygen would be useful. A careful physical examination of the patient revealed the fact that the second sound of the heart had disappeared and that the heart was acting badly. There was no asphyxia, but cardiac dilatation seemed threatened. The anesthetizer wisely declined to use nitrous oxid and oxygen, stating that in his experience a similar patient had suddenly died during the administration of nitrous oxid and oxygen while preparations were made to induce labor. Ether and oxygen were then given and labor was induced. After 2 hours of ineffectual pain, with continued vomiting and bad heart action, it was believed imperative to deliver the patient. Accordingly ether and oxygen were again administered, dilatation of the cervix was completed by the gloved hand, and the child delivered living by forceps. The action of the heart improved under the anæsthetic and with the aid of vigorous stimulation hypodermatically the patient recovered from her labor. It seemed to us that in this case we were practically limited to ether and oxygen. Chloroform was prohibited by the hepatic toxæmia present and by the condition of the heart.

Patients sometimes express a decided preference for a given anæsthetic in labor. Thus in the writer's experience a patient was given nitrous oxid and oxygen for the induction of labor and when the stage of expulsion arrived it was necessary to deliver her by forceps. Nitrous oxid and oxygen were again administered but failed utterly to anesthetize the patient and ether and oxygen were substituted. On recovering from her labor the patient made a very earnest request that nitrous oxid and oxygen be omitted in her future obstetrical experience.

Chloride or bromide of ethyl are in use by some for patients in labor. They are easy of administration, pleasant to many patients, uncertain in action, causing in many cases considerable excitement and disturbing the action of the heart. Their use must be exceptional.

It is unnecessary in this presence to draw attention to the fact that modern observations on toxæmia have practically debarred

RETROPERITONEAL SARCOMA

By HUGH H. TROUT, M.D., F.A.C.S., AND GILBERT E. MEEKINS, M.D., ROANOKE, VIRGINIA
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THIS article deals with the report of two cases and a review of the literature upon the subject of retroperitoneal sarcoma to April 1, 1920.

CASE 1 Mr S. P., age 53, resident of Roanoke, Virginia, nationality, American, admitted to Jefferson Hospital, January 20, 1920, complaining of a "large swelling in lower abdomen."

Present illness. Since January, 1919, patient has been annoyed by pains in abdomen, which were similar in character to those preceding a bowel movement. These pains always occurred at night, usually two and three times a week until the summer of the same year. Patient had relief by going

hard, round, and, according to the patient, freely movable under the skin. At this time, the pains began to occur in the day time as well as at night, having approximately the same intervals. From that time until his admission to the Jefferson Hospital, the swelling has rapidly increased in size and, at present, is larger than a coconut, slightly movable, hard and nodular, but not attached to overlying skin. The pains described were the only symptoms up to one month ago, during which time he has steadily lost his desire for food, has polyuria, nycturia, is extremely constipated and has lost considerable weight and strength. No history of trauma. Habits are negative except that the patient drinks six cups of coffee daily.

Patient had mumps, measles and chickenpox in childhood.

he denies lues.

Impression. retroperitoneal sarcoma (Figs 1 and 2).

Operation and subsequent course. Patient operated upon January 21, 1920. The growth was found to be about 12 inches in its largest diameter, firmly adherent to the transverse and descending colon and sigmoid. It was so intimately attached to the great vessels that it was impossible to deliver the tumor complete. However, as much as possible was dissected out, the sigmoid and transverse colon cut across, and the growth carefully delivered. Patient died January 25, 1920.

Pathological examination. Gross description. 1, and has 2 covered 3 adherent

capsule. Lobes are an inch in consistency and no area of fluctuation or softening can be found. The transverse and descending colons are firmly attached to anterior and left lower surfaces.

On sections, specimen when cut gives feeling as if knife were cutting through gristle. Internal structure has pale, yellowish-gray appearance. Content is everywhere solid and multiple, and minute arborizations are visible running in every

gives one the impression of a hyaline degeneration. Tumor measured 18½ inches in greatest and 13 inches in smallest diameter (Figs 1 and 2).

amount of a homogenous intercellular material in which there are but few blood-vessels and absolutely no visible cell structure. This substance stains

thelial cells.

Accidents and operative history. Fracture of left leg in 1906.

Physical examination. On admission, temperature 97.6°, pulse 70, respiration 18. Average weight 150 pounds; present weight 133 pounds. The patient looks emaciated and cachectic. The skin and mucous membrane show slight anemia. There is no tenderness over any of the sinuses and antra. The pupils are equal and react equally to light and accommodation, no nystagmus, no conjunctival jaundice. Ears and nose are negative. The teeth are in bad condition, over half of upper and lower are missing and the remainder show marked pyorrhea alveolaris. The tonsils are present and show no enlargement or infection. Uvula and pharynx negative. The thorax is of the scaphoid type with nothing unusual present over surface. Respiration is equal on both sides. Point of maximal impulse not visible. Heart, point of maximal impulse located in fifth interspace, 2 centimeters

obstetrical science affords, but the physician should insist that he or his anæsthetist should decide upon the agent to be employed.

Economically speaking, this will increase the cost of parturition, but this will be more than compensated by the lessened exhaustion of the mother, her more prompt recovery, the lessening of hospital days, and a better resumption of domestic or other economic duties. For the obstetrician, analgesia or anæsthesia, as skillfully given, make for more accurate diagnosis during labor and for the successful management not only of spontaneous and normal parturition, but of complicated conditions.

It is a familiar fact that recovery from parturition is greatly delayed by exhaustion during labor. In this regard modern analgesia and anæsthesia is one of the greatest advances made by modern obstetrical science.

One must not forget the considerable foetal mortality and morbidity produced by prolonged birth pressure and by unregulated and violent expulsive efforts. The danger of asphyxia to the foetus during labor by analgesia and anæsthesia is vastly less than the danger of cerebral or other hæmorrhage from birth pressure, and the avoidance of this latter complication is greatly enhanced by obstetrical analgesia and anæsthesia.

THE TREATMENT OF ABORTION¹

By D. S. HILLIS, M.D., F.A.C.S., CHICAGO

NO question in the field of pathological obstetrics has caused more controversy than that of the treatment of abortion. The voluminous literature and the large number of investigating committees abroad and at home testifies only too well that the profession has not come to a definite decision as to the best course of therapy.

From the earliest times there has been a division between those who advise expectant conservative care and those who insist on operative interference. In the treatment of infection of the uterus after labor at term, there has been a decided trend toward conservatism. Each puerpera who has died as a result of vaporization, the use of sharp and dull curette and uterine douche has contributed her bit to this slow progress toward better things. And who shall say she has died in vain? But we cannot say that there has been an equal progress in the therapy of infected abortions. Although it seems that the specialist in obstetrics is tending in the direction of conservatism in both postpartum infections at term and those in the earlier months of pregnancy, it cannot be said that the opinion is by any means unanimous. This is not true in the case of the general practitioner who, imbued with the present-day spirit

of activity, feels that he must do something and that something to him means curettage.

To answer this question I undertook the following clinical investigation. I do not pretend to offer anything new but to present a series of cases from the clinic of the Cook County Hospital. These from the standpoint of results alone seem to indicate that the conservative treatment is the best.

After all, the true test of a therapy is result. When the field of bacteriology opened its gates to us, many felt that a solution could readily be worked out on this basis. It is needless for me to point out that up to the present time a therapy based on bacteriological examination of the vagina and uterus has been impractical and has offered no results commensurate with the amount of difficulty in carrying out the investigations. In addition the pathological studies of the uterine content have not been of as much assistance here as abroad, chiefly because of the great difficulty in securing postmortem examinations.

I believe that the problem in the treatment of septic abortion is very much like that which existed in the case of appendicitis. At first the mortality in appendicitis was very high and the complications many, but with the doctrine of operation as soon as the diagnosis

¹Read before the Chicago Gynecological Society, Apr 23, 1920. (For discussion see p. 632.) Inaugural Thesis.



Figs. 3 and 4 Gross specimen of tumor.

cessible to him at the time of his first summary. The others, 24 in all, except 5 of his own cases, had been reported by various men since 1900.

Steele's latest article is undoubtedly the best review of this subject up to 1904, and, as far as we know, still retains that prestige. Briefly stated, he drew the following conclusions:

1. Retroperitoneal sarcoma is not so very unusual

2. It occurs most frequently during the first, fourth, fifth, and sixth decades of life.

3. The course is brief, the average interval in 58 of his cases was eight and one-half months between the time of their first detection and operation or death

4. The most common point of origin is the lateral portion of the abdomen, and the right side is most often affected. The tumor is usually lobulated, encapsulated, and prone to degeneration in early stages. Metastases occurred in one-third of the cases, and are most often found in the liver and lungs.

5. Symptoms are indefinite gastric disturbances, depending upon the position and size of tumor, and relation thereto of the hollow viscera and other organs.

6. Point of most value in diagnosis of condition is relation of stomach and intestines to growth. The only characteristic sign is the tendency of this type of sarcoma to degenerate early in its course.

7. Only treatment consists in early surgical interference (It will be remembered

Steele's article was written before radium had been tried on this type of tumor, and his seventh point at that time was well taken.)

From 1904 up to the present time, we have been unable to collect from the literature but 10 cases, which had undergone operations, and with our 2 cases, a total of 12. Two of these were reported by Petron (2) in 1915. Walters and Hall (3) in 1907 reported a retroperitoneal sarcoma of Douglas' pouch, and Le Conte (4) in 1908 reported one of an undescended testicle, in the retroperitoneal region, strangulated by a twist.

As far as we have been able to ascertain but three of the series were operated upon successfully, and strangely they were the largest of the group in which weights were reported. One of these was reported in 1912 by Duff (5), the second by Bull (6) in 1919, and the third operated on by Trout in 1906.

Bull's case was indeed remarkable because of its huge size; the tumor after removal weighing 34 pounds. Microscopical examination showed it to be a myxofibrochondrosarcoma. The patient was a machinist 54 years old and had the usual indefinite abdominal pains, beginning 10 years before operation. The tumor became palpable the sixth year. Since no mention was made in Steele's article as to the weight of any of his reported cases, we believe this to have been the largest one thus far given to the literature.

In 1906 Trout removed a retroperitoneal growth, weighing 22 pounds, from a woman 42 years old. This patient was last heard

accordingly made to that effect. However, the latter cases, though treated expectantly, were not transferred to the list of expectant cases.

Cases on the expectant list were treated as such unless hæmorrhage was very profuse or persistent, when they were curetted. Notations were made accordingly and the cases though curetted remained on the expectant list.

STATISTICS OF THE CHECK SERIES

The parity of the women is shown in Table III.

TABLE III.—PARITY

	PARA												Total
	0	1	2	3	4	5	6	7	8	9	10	11	
Active List	6	10	4	8	7	6	6	4	4	0	0	0	55
Expectant List	10	12	9	6	12	8	3	3	2	1	1	1	67
Total	16	22	13	14	19	14	9	7	6	1	1	1	122

It appears that 38 of 122 cases or 31.14 per cent were paræ nought or one.

The distribution of the cases according to the period of gestation is shown in Table IV.

TABLE IV.—PERIOD OF GESTATION

	MONTH OF PREGNANCY							Total
	1-2	2-3	3-4	4-5	5-6	6-7	7	
Active List	7	23	12	10	0	1	2	55
Expectant List	6	21	21	12	3	4	0	67
Total	13	44	33	22	3	5	2	122

The figures indicate that 77 of 122 abortions or 63.1 per cent occurred between the second and fourth months of pregnancy.

A history of previous abortions was secured in 35 per cent of the series. The average number of abortions for each para group was about the same and the average period elapsing from the time of abortion to admission to the hospital was 5.67 days.

In 68 cases an especially careful attempt was made to determine the etiology with the results shown in Table V.

The spontaneous column included those patients in which history and examination were negative.

TABLE V.—ETIOLOGY OF ABORTIONS

	Spontaneous	Induced Self or Criminal	Associated Pathology or Accident	Total
Active List	20	12	3	35
Expectant List	15	10	8	33
Total	35	22	11	68
Percentage	51.47	32.35	16.17	

The induced or criminal group included: instrumental criminal abortions and the self-induced by catheter, silver wire, metal bougie, slippery elm, vaginal douches, quinine, etc.

In the group with associated pathology or a history of accident there was noted: fibroids uteri, retroversionflexion, hyperemesis gravidarum, syphilis, acute bronchitis, excessive coitus, blows on the abdomen, etc.

The figures indicate that in half the cases the etiology was unknown. The percentage of 32.35 for the group of self-induced and criminal abortions is highly important, for this type of patient is so likely to be infected beyond the secundines and in or beyond the uterus that even the exponents of radical operative treatment could not hope to remove the source of infection by the curette. In addition this class must necessarily be shut out from active interference and is the group which clinical experience has shown die. These are the cases which furnish our mortality statistics almost *in toto*.

The types of abortion are classified in Table VI.

TABLE VI.—TYPE OF ABORTION

	Complete	Percentage	Incomplete	Percentage	Total
Active List	10	13.13	45	81.81	55
Expectant List	19	28.35	48	71.64	67
Total	29		93		122
Percentage	23.77		76.22		

The table indicates that the incomplete abortions were more than three times as common as the complete.

The temperature on admission of the series fell into the groups in Table VII.

such is always more satisfactory to the surgeon, there are instances when this method of obtaining information has not been altogether gratifying to relatives of the late patient.

Our only disagreement with Steele's conclusions would be concerning the frequency of such growths. We have noted the earliest case reported in his series was in 1832 (11). Our 12 with his 96, brings the total up to 108. Surely 108 cases reported in the literature, at least the available literature, can not be considered very common.

Again, in going over our own hospital records, we have found but three other admissions for retroperitoneal sarcomata; these three were all found to be inoperable.

Therefore, we are led to believe this condition is just uncommon enough to be wrong-

fully diagnosed by the profession at large, and, since early diagnosis is the fundamental point concerning the patient's chances of recovery from operation, we feel this article has not been undertaken in vain if it will keep this abdominal possibility before the diagnostician's mind.

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9. " " " " " "
10. " " " " " "
11. " " " " " "

The expectant list show only a very slight excess in the average days of lochia rubra.

Table XI shows days in hospital.

TABLE XI.—DAYS IN HOSPITAL—ACTIVE LIST

No	Days in Hospital		Average
9	Non-Curetted Cases	84	9.33
46	Curetted Cases	421	9.15
55	Total	505	9.18

EXPECTANT LIST

No	Days in Hospital		Average
27	Curetted Cases	280	10.87
40	Expectant Cases	347	8.67
67	Total	627	9.35

There was practically no difference in the length of stay in the hospital of the patients on the two lists. They were discharged from the hospital usually 2 or 3 days after curettage.

COMPLICATIONS AND MORTALITY

There were only two instances where complications occurred, which were associated with or the result of hospital treatment. One case was a bronchopneumonia in a patient who had been curetted 4 days previously. She made an excellent recovery and was on the active list. The other woman was on the expectant list. She was curetted for persistent bleeding, following a self-induced septic abortion, and was discharged apparently well. She returned in 6 days with a parametritis not recognized on discharge.

In addition there were two cases of sepsis, both patients being on the active list. One was a criminal abortion, the woman being moribund on admission and dying within 36 hours. The second was an instance of self-induced abortion. The patient had a marked peritonitis and broken cardiac compensation on admittance and died on the fourteenth day. Neither was curetted in view of circumstances.

There were no other deaths and if we exclude above cases there was no mortality on either list.

SUMMARY OF ESSENTIAL FEATURES

1. A series of 200 cases of septic abortion, divided equally into those curetted and those let alone, showed strikingly that the cases

with no local treatment (conservative) had fewer days of fever, shorter stay in hospital, fewer complications, and a lower mortality.

2. A 6 months' clinical study showed that no operative procedure should be carried out in septic cases until they are 5 days' fever-free, when they become so-called non-septic cases.

3. A study of 122 cases of so-called non-septic abortions showed:

a. That 63.11 per cent of abortions occurred between the second and fourth months, and a history of previous abortions was secured in 35 per cent;

b. That 32.35 per cent of the abortions were self or criminally induced and potentially septic;

c. That 61.46 per cent entered the hospital with a temperature above 98.5° F.;

d. That while 9 or 16.36 per cent of the 55 cases on the active list did not have to be curetted, 27 or 40.29 per cent of the 67 on the expectant list had to be operated upon;

e. That five septic cases that were discharged not curetted returned because of resumption of hæmorrhage;

f. That there was no striking difference between the active and expectant lists in average days of temperature, lochia rubra, and stay in the hospital;

g. That there were only two complications and the mortality was nil.

CONCLUSIONS

1. Cases of septic abortion should receive no local treatment until they are at least 5 days' fever-free; the one exception being hæmorrhage that threatens life.

2. This nominal period converts a septic case into a so-called non-septic, which has fewer days of fever, a shorter stay in the hospital, fewer complications, and a lower mortality.

3. So-called non-septic cases should be curetted as a routine for:

a. 40 per cent of expectantly treated cases have to be curetted,

b. Curettage insures an empty uterus and prevents subsequent bleeding,

c. It shortens the stay in the hospital,

d. This procedure is relatively harmless in comparison with the good it accomplishes.

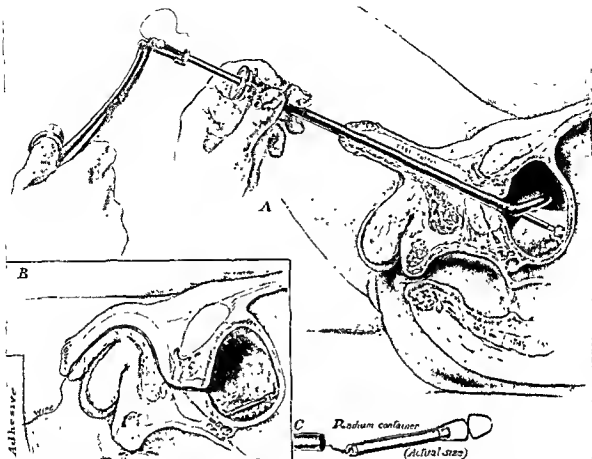


Fig 2 Drawing showing the technique of applying radium preparations, a, capsule in position, b, and radium container, c.

diameter to admit the capsule. This instrument does not obstruct the view into the bladder as much as does the one of larger diameter but it is more difficult to use because the shaft must be detached in order to insert it through the eyepiece of the cystoscope. By means of the obturator or plunger of the instrument, the capsule is expressed and the spring clip released, the latter grasping the tissues as it closes. When the clip is attached and the instrument removed the guide of silk or wire running from the capsule through the urethra to the outside is fastened to the thigh with adhesive until the radium is taken out.

In order to remove the capsule the guide of silk or wire is threaded through the obturator of the applicator and the capsule is engaged into the end of the instrument. When the obturator is withdrawn and traction put on the guide, the

capsule is led into the forceps, the clip is compressed at the proximal part of the figure-of-eight, its jaws are opened, and the tissues released from its grasp.

The bladder should be kept distended with 5 or 6 ounces of sterile water while the radium remains. If this is not done the walls of the bladder will fall together and a burn may develop on the normal mucosa. In case the patient urinates while the radium remains attached, water or boric solution should be instilled at once. This is an advantage over the application of radium through a suprapubic cystotomy in which case the bladder cannot be distended and its walls kept apart.

This instrument can be used only through a direct operating cystoscope. In the female a Kelly cystoscope makes this method of application very simple. The capsule may be attached

died of pneumonia. In spite of the fact that the foetus was delivered within 2 minutes of the mother's death, the foetal heart was not beating, and all efforts at resuscitation failed.

The earliest cases were by far the most severe, and the gravity of the new cases decreased steadily. During the first few days, all of the patients either died shortly after entrance, or were desperately sick, so that at one time we seriously considered the advisability of inducing labor in all cases where the foetus was viable, not only to save the child, but possibly increase the mother's chance of recovery, by giving the lungs more room in which to expand.

CONCLUSIONS

1. The maternal mortality was about the same as in the epidemic of 1918-19.
2. The mortality and morbidity, while small in cases of influenza, was much greater in those complicated by bronchopneumonia.
3. The incidence of abortion and of pneumonia is greatly decreased by keeping the patients in bed, from the time the diagnosis is made until recovery is complete.
4. Abortion is caused by toxæmia, or insufficient available oxygen in the maternal blood, with physical exertion as a contributory factor.
5. The virulence of the epidemic decreased steadily and markedly.

PARASACCULAR OR SLIDING HERNIA

By C. H. CRILEY, M.D., LOS ANGELES, CALIFORNIA

Associate Professor of Surgery, University of Southern California. Junior Surgeon, Los Angeles County Hospital

PARASACCULAR or sliding hernia has been referred to by various names as extrasaccular, *parglissement*, and adherent hernia of the large intestine. The names having been applied in some instances to express the anatomical position, in others to express the probable etiology.

Some of the best descriptions of this type of hernia have been given by English and American surgeons, notably Weir, Hotchkiss, Carnett, Walton, Moschowitz, and Rockey.

In the ordinary types of abdominal hernia, a sac or pouch of peritoneum is forced through a weak place in the abdominal wall. Into this sac, gliding freely and smoothly, is forced a loop of intestine or omentum, or other viscera. These viscera are completely reducible into the abdominal cavity without affecting the sac, unless complicated. However, in the production and formation of an abdominal hernia, a peritoneal sac is not absolutely essential. Herniæ of several different viscera without peritoneal sacs have been reported, as have a considerable number in which the sac is incomplete, surrounding the viscera, partially, or on one side alone. These

para- or extrasaccular herniæ are essentially and fundamentally different from an ordinary hernia which has become adherent to its sac by inflammatory adhesions or otherwise (1).

Of the cases here presented, 7 involved the colon or large bowel in some portion, and 2 involved the bladder. All were inguinal herniæ, 6 appearing on the left side and 3 on the right. The six cases occurring on the left side were quite similar, involving the fused portion of the descending, or iliac, colon and differed only in size and extent. Before operation these herniæ all appeared to be of the ordinary inguinal variety. Upon opening the sac the content of the small bowel, or omentum, was readily reduced, but there remained a portion of large bowel which could not be separated from the sac without tearing. This attachment was always along the posterior wall of the sac, and bleeding was quite profuse when torn.

On examination it was found that the hernial sac did not surround the large bowel but passed over it anteriorly, covering approximately one-half or two-thirds of the circumference, and leaving the remaining part

ticable apparatus for finger extension. These splints have been made, as the occasion arose, out of small stiff wire, the ring firmly padded with a single wrapping of soft calfskin leather. A well-fitting ring is essential to the comfort of the patient and the successful use of the splint. The end of the splint should extend beyond the end of the finger about 2 inches. The thread from the nail is attached over the extremity of the splint.

The splint can be bent, thus giving flexion or extension to any part of the extremity, as the

ness of the constant pull on the nail; but this usually subsides after the first 24 hours. Only the most gratifying results have followed this procedure.

This method of extension is especially indicated in the treatment of—

1. Compound fractures of the digits, as it does not interfere with the use of a moist dressing.

2. Simple fractures of the first, second, and third phalanges, with or without overriding. Also, it has proved successful in the handling of certain fractures of the metatarsals and metacarpals.

3. Acute or chronic joint affections, due to injury or arthritis when extension or flexion of the joint is essential during the treatment.

4. Post reconstructive operations on the fingers or toes.

THE USE OF THE TENDON OF PSOAS PARVUS AND FASCIAL TRANSPLANTS IN THE TREATMENT OF PROLAPSE OF PELVIC VISCERA

By GEORGE C. BRYAN, M.D., F.A.C.S., WALLA WALLA, WASHINGTON

THE end-results of operation for prolapsus uteri are often anything but satisfactory.

If the pelvic viscera do not actually drift down again the subjective symptoms are still decidedly annoying. Many women are left with neurosthenic tendencies, as a result of pelvic reflexes, which are no credit to the operator. If the uterus is anchored to or implanted in the anterior abdominal wall, the patient is left in an abnormal nervous state and still continues to complain of dragging sensations no matter how firmly the uterus may remain where it has been put. If any of the peritoneal reduplication or so-called uterine ligament methods are used the weight must be carried more or less on peritoneal folds, and dragging sensations must and do constantly recur. If hysterectomy is performed the other pelvic viscera still will sag downward, in spite of being relieved from the weight of the uterus. The Watkins and Mayo operations are both fairly satisfactory but both are unnecessarily mutilating, and besides the end-results are not invariably perfect.

Why the ligament of the psoas parvus has not been used long before this for the purpose of supporting the sagging pelvic viscera is a question which is hard to answer. On account of its structure and position it is apparently ideally

placed there for that very purpose. The writer has made use of the three following techniques:

Technique 1 In all operations for prolapsus it is, of course, understood that the pelvic floor shall be so thoroughly built up as it is possible to do. Preferably this should be done at a preliminary operation. Then a week or so later the abdomen is opened by mid-line incision to the umbilicus, the patient placed in the Trendelenburg position, and the intestines tucked back with gauze or rubber tissue packs. Incision is then made through the peritoneum covering the psoas parvus tendon in the iliac fossa on each side opposite the central point of the true pelvis. The tendon is identified, retracted into the abdominal cavity, and is followed down to its insertion into the iliopectineal line. It is then severed as closely as possible to its iliac attachment. With a long curved forceps the perito-

passed behind the first one. The free end of the psoas parvus tendon is grasped and drawn inwardly through the broad ligament subperitoneally, emerging at the peritoneal opening over the

From a diagnostic standpoint these herniæ present nothing unique. It has been frequently stated that this type is limited to the aged, to large herniæ, and to those of long standing. It certainly is unsafe to conclude that, therefore, small herniæ in young individuals cannot be sliding hernia or parasacular. Four of the cases in this group occurred under the age of 42; one occurring at 36, one at 41, one at 39, and one at 26 years of age.

Difficulty of reduction and retention has been considered a probable diagnostic sign of sliding hernia, and is present in a majority of cases. However, two of these cases had no special difficulty in that way, and one case, R. D., boasted of his ability so perfectly to retain and disguise the hernia that he has been able to pass several railroad examinations before being rejected, although the hernia had been present over 15 years.

Bismuth enema and X-ray have been used to determine the presence of colon in the hernia but does not give any information as to its intra- or extra-sacular position. With our present means, differential diagnosis must await the operation, and even then it is not easy in some cases to identify the structures immediately. Cases are reported in which the colon was so completely without sac that it was opened in the belief that it was the sac (3). Similar cases are reported regarding the bladder.

These sliding herniæ have been mistaken for ordinary herniæ with adhesions. The dissimilarity between parasacular and ordinary herniæ is conclusively demonstrated in a study of the embryologic development of the parts involved.

In the early weeks the coelom or abdominal cavity is formed as a single space into which the abdominal viscera emerge from a posterior position. As the viscera are projected into the cavity they push before them the lining membrane or peritoneum, which covers them on their ventral surface and becomes reflected on some to form a mesentery.

By the seventh week, the intestines have grown too long to remain straight within the abdominal cavity and the process of coiling begins. The colon makes almost a complete loop. The cæcum passes upward toward the

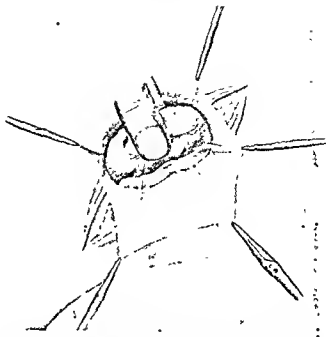


Fig. 1. The descending colon with its posterior fusion to the abdominal wall has slid 2.5 inches through the hernial canal in or behind the posterior wall of sac. Case No. 3.

spleen and the cardiac end of the stomach, across under the liver and down to its final resting place at the level of the sacro-iliac joint, arriving during the eighth fetal month. With the completion of this progress and rotation, certain changes take place in the peritoneum forming the mesenteries. First the transverse mesocolon fuses with the duodenum and the dorsal wall; and the mesentery of the duodenum atrophies and becomes obliterated, as does the lower part of the central mesentery. Next the dorsal layers of the mesenteries to the ascending and descending colon become fused with the posterior peritoneum and atrophy or are converted into connective tissue. In a small percentage of cases this fusion is absent or incomplete. This fusion and obliteration of peritoneal tissue is not a result of pressure or traumatism as has been assumed by some. It is as much a part of the regular embryologic development as is the bowel rotation, or the transitory formation of the notochord, the bronchial clefts and arches, or any other of the definite stages in development.

In the normal or usual condition there results from this fusion and degeneration a positive and permanent fixation of these portions of the colon to the posterior wall. This

TRANSACTIONS OF SOCIETIES

CHICAGO GYNECOLOGICAL SOCIETY

REGULAR MEETING HELD APRIL 23, 1920, DR. ARTHUR H. CURTIS, PRESIDING

UNUSUAL GROWTH IN TUBE STERILITY IN COWS

DR. N. S. HEANEY: This is a specimen from a tube removed from a case operated for proclitelia. After the uterus was removed I found this small nodule in one of the tubes. It is about the size of a

I have another section which I removed a week ago Sunday from a cow. Perhaps you know that sterility and abortion in dairy herds constitute a problem of great economic importance to the dairyman. A man will find that he has a pretty good herd of cattle but no calves coming along. The cows will be bred and re-bred but they do not become pregnant. The disease is said to be a sequel of what is called infective abortion, whereby cows retain the afterbirth and give birth to premature calves, and frequently subsequently fail to become pregnant.

Sterility in cows is most frequently due to an endocervicitis and the treatment instituted for it frequently relieves the sterility. It is quite similar to the condition in the human. On my farm we had ten cows that became sterile. One of these had an infantile uterus and all the findings of an infantile uterus in the human female. We dilated the cervix and bred her several times but she failed

started on a course of fever, so that we thought she was going to die, but she survived this infection, although we had to beef her in six months because she remained sterile. That left 8 cows, four of

human cervix.

DISCUSSION

DR. PADDOCK: My attention was recently called to an article upon this subject and how the disease spread to other cattle. My impression is that the writer claimed that these cases get well without any treatment.

DR. HEANEY (closing): They do not all remain sterile, but I have found that a considerable percentage do.

PREGNANCY COMPLICATED BY INFLUENZA

DR. SAMUEL A. DURR discussed the subject of pregnancy and influenza (see p. 610).

DISCUSSION

DR. PADDOCK: During the influenza epidemic, pregnant women who had influenza presented a more unfavorable prognosis than the non-pregnant and justly so. It did not seem to matter much what the treatment was, a large percentage died; whether the uterus was emptied, or whether it was not, did not seem to alter the condition.

The high fever, of course, has an unfavorable effect upon the fetus as in other diseases with high temperature. Abortion often occurred and when it did it seemed to lessen the chances of recovery of the mother.

DR. E. L. CORNELL: My experience in the last

are smaller than normal, but apparently healthy. The patient who died was first seen at 8 o'clock in the evening and she died the next morning at 4, having been up and about all the time. The other four cases were sent to the hospital and kept in bed.

In the first epidemic the mortality was very high, mine was over 60 per cent. It did not seem to me that any particular treatment made much difference.

THE TREATMENT OF ABORTION

DR. D. S. HILLIS discussed the treatment of abortion (see p. 605).

CASE 1. January 18, 1917. Fred S., a waiter, age 42. Previous diseases include curvature of the spine which was noted when he was 27 years of age. Diagnosis of Pott's disease was made at the time and extensive treatment including the use of braces was continued for a considerable time with excellent results. Six years ago a left inguinal hernia suddenly appeared as a result of a heavy lift. Increase in size has been gradual, and at present it extends well down into the scrotum. It was always reducible but difficult to retain, and occasionally caused slight pain. Constipation has been obstinate ever since the occurrence of hernia.

Operation at County Hospital. Oblique sac isolated and opened. Content was a loop of approximately 3 inches of descending colon fused with the posterior wall of the sac and not separable. Examination showed it to be parasacculal in type. Redundant portion of sac removed and closed by sutures. Fused portion of sac and parietal peritoneum dissected upward away from the posterior abdominal wall, until the attached colon could be replaced within the abdominal cavity without kinking or tension. Closure by Bassini technique. Examination 4 months later showed the repair in excellent condition and the constipation apparently cured.

CASE 2. 1917. Mr. J., age 65, Methodist Hospital, Dr. Duffield's case. Left inguinal hernia of 15 years' duration. Increase in size gradual but progressive. For the past 6 months, it has been irreducible. At present it is about 4 inches in diameter.

Operation at the Methodist Hospital by Dr. Duffield and Dr. C. H. Criley. The sac contained omentum which was somewhat adherent, but was easily separated and reduced, and a loop of descending colon 2.5 inches of which was in a parasacculal position on the posterior wall of the sac. The redundant portion of sac was excised and the opening sutured.

Wound healed without severe kinking. The hernia was repaired by the modified Bassini technique. Wound infection developed with breaking down of most of the repair, and of a small hernia, 1.5 inches in diameter, recurred at the lower angle of the wound. This recurrent hernia was repaired on February 26, 1918, by imbrication of muscles and aponeurosis with kangaroo mattress sutures. August 1, 1918, recurrence at the lower angle of the wound had again taken place.

CASE 3. June 30, 1918. Wm F., male, age 69. Chief complaint was bilateral hernia of only 8 months' duration.

Operation at the County Hospital, Dr. Kessler

an oblique inguinal hernia containing 2 inches of descending or iliac colon in parasacculal relation

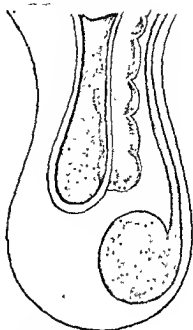


Fig 3. Diagrammatic sketch showing the partially extraperitoneal relation of the colon to the hernial sac.

was corrected with technique similar to that used in Case 1. Convalescence was normal and the patient left the hospital in 3 weeks, apparently cured.

CASE 4. July 18, 1918. Jose S., male, age 41. Previous history negative. A left inguinal hernia had appeared 3 weeks previously from severe strain. It was of moderate size, extending about 1.5 inches below the external abdominal ring.

Operation at the County Hospital. Oblique sac containing 2.5 inches of descending colon was found in parasacculal relation. Technique was used similar to that in Case 1. Convalescence was normal, and the patient left the hospital cured in 2 weeks.

CASE 5. August 1, 1918. Warren M., male, age 40. A right inguinal hernia of one year's standing was easily reduced but difficult to retain. Slight pain frequently from pressure.

Operation at the County Hospital. An oblique sac contained the caecum and appendix.

Approximate full length of appendix was 12 inches. Much of the appendix was loose and the nerve was ligated and excised and the stump buried with a purse-string suture. The posterior peritoneum and attached caecum were then dissected upward away from the posterior wall until the caecum could be replaced in normal position. The redundant sac was excised and closed with sutures. Repair was accomplished by modified Bassini technique. The patient left hospital in 2 weeks, cured.

CASE 6. August 26, 1919. W. S., age 55. Suffered from a hernia of the right inguinal region, for 15 years.

following abortion with neisserian infection I think in those cases one always gets a pelvic peritonitis and as a rule a tubal involvement. I think if the literature were gone over, it would be found that in all cases in which there was an active neisserian infection a pyosalpinx developed before they became well. It has been my experience that if they are treated entirely from a medical aspect, the result would be very much better. I personally would not interfere with a case like that under 6 months.

DR C B REED: I was very much gratified to have the essayist so completely confirm the principles and practices which we have been carrying out in our own work.

DR HEANEY: There are two or three points which are not clear to me in Dr Hillis' paper. The first is, whether Dr. Hillis advocates curetting in septic abortion after a period of 5 days without fever. That is the only point in Dr Hillis' paper with which I would take issue, that is, the safety of curetting a case as a matter of routine 5 days after being temperature-free, except for some reason as hemorrhage. If a patient had been temperature-free for 5 days and then had a hemorrhage, you would have to curette whether you wanted to or not. The disappearance of temperature I do not think indicates that the infection has cleared up. As Dr. Bacon says, it is a matter of drainage. The ordinary sore throat is a parallel case. You can have a bad sore throat with malaise, headache, backache, and yet have temperature only for a short period of time or no temperature at all, but inspection of the throat shows there is still infection present. With an abscess, you may have temperature and as soon as you open the abscess and establish drainage the temperature disappears. The same thing pertains to infections inside the uterus. Because you cannot see inside the uterus

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I was not quite clear regarding the nomenclature. His division of cases somewhat confused me. As I understand it, those cases put in the expectant list

operated or not. Now there is always danger in following a rule. I think that is the greatest objection to reports including statistics. A man will

be different. I would not be disposed to curette every case that came into the hospital that had had an abortion, because a large percentage of those cases might already be completed. The question, then, arises, how do you determine whether a patient has a complete or an incomplete abortion? Hemorrhage would be one of the deciding factors. Ordinarily, if a patient aborts completely, she has very little or no lochia. I would not be inclined to explore a uterus unless I had evidence from the history that the abortion was incomplete. Except as to these several points I agree with Doctor Hillis entirely.

DR PADDOCK: May I ask the Doctor how he would treat a case of retained placenta at 4 or 5 months, or more?

DR CURTIS: I was interested in Dr. Hillis' remark that 40 per cent had hemorrhage. I would like to have him tell us what data he has to confirm his views. I have been very much interested in patients who are sent to the hospital after abortion. Most frequently infection is due to the spreading of bacteria which have been introduced into the uterus; the abortionist often attempts once to remove the fœtus and fails, then goes in a second time into an infected field, and thus spreads the bacteria which he previously introduced. A second type of infection results from cervical tears. We all know we have a great many bacteria in the cervix. All that is necessary for infection is an extensive tear of the cervix which permits the bacteria, which are already present, to pass through, into the extra-uterine cellular tissues.

DR HEANEY: In cases where the patient has been bleeding for 10 days and you curette, in how many would you get nothing to account for the bleeding?

DR. DOEDERLEIN: I would like to ask a question which has not been dwelt upon, even with expert operators there are some who perforate the uterus. I saw a case in consultation a few days ago. There was a virulent peritonitis. The case would be a coroner's case if the patient died. What should the doctor do?

DR PADDOCK: In the case cited by the essayist he says the interne did the proper thing; does he really believe that? I think in a recent conversation with him he told me he would not be afraid to leave the placenta in the uterus for any length of time. Has he looked up the literature or has he heard of similar cases where the placenta has been left in and digested? It brings us to the question of a case where we have made the diagnosis of a pregnancy at 3 months—a mistaken diagnosis, perhaps. Is it not a fact that perhaps the embryo had stopped growing and was finally digested by the uterus? This case of Dr. Hillis' may or may not have been that. The woman says she passed a piece of placenta; no one saw it but the patient. We have to doubt her statement. It may have been that the fœtus was not more than 4 or 5 months in size. She may have passed the placenta or she may not have.

TWO HUNDRED FIFTY OPERATIONS ON THE GALL-BLADDER AND DUCTS¹

By EDGAR R. MCGUIRE, M.D., F.A.C.S., BUFFALO, NEW YORK

THAT gall-stones have their origin in a primary cholecystitis seems to be one of the few fairly well established facts in connection with biliary disease. Personally, I have always held to the view that the infection is invariably hematogenous in origin and is not the result of direct extension. The rôle played by metastatic infection in the causation of many diseases is gradually becoming clearer. Whether we accept in its entirety the work of Rosenow with relation to the selective action of bacteria, there can be little question that most obscure infections are metastatic in character. I presume biliary infections can arise from any hidden focus but probably they most frequently follow an abdominal infection, particularly an infection in the appendix. Since I have appreciated this fact I have been astonished how frequently I have found a diseased appendix, when gall-stones are present. I have made it a rule to remove the appendix in every case of gall-bladder disease unless there is some definite contra-indication. The rôle played by typhoid infection has received rather too much emphasis. At most it is not a causative factor in more than 10 per cent of cases and probably less. It does, however, illustrate excellently the metastatic production of such infections; a primary lesion in the intestinal canal infecting the bile through the blood stream.

The most frequent organisms found are the streptococci, the staphylococci, colon and typhoid bacilli, possibly in the order named. So many cultures from gall-bladder stones remain sterile, it is very difficult to secure accurate statistics regarding the bacteriology of stones.

In nearly every clinic, gall-stones are almost three times as frequent in women as in men. From the point of etiology, this is rather difficult to explain. Of course, we have pregnancy, pelvic infections and perhaps a more sedentary life, as possible explanation,

but if we adhered to the bacterial origin of gall-stones it is difficult to see how these factors play such an important rôle.

The diagnosis of gall-stones is usually not a difficult procedure. I am not a believer in the statement that a large percentage of people with gall-stones have no symptoms. Careful histories will usually show that these patients have had a mild initial infection and a prolonged secondary stage in which the symptoms are largely gastric in character. There comes a time sooner or later when attacks of pain of varying severity occur in the right upper quadrant. The most important detail in the diagnosis is a careful, time-consuming history. This should begin with the initial infection and follow up to the present attack, step by step. The X-ray is probably second in importance in making the diagnosis. I believe its greatest value lies in the negative information obtained; it eliminates other causes of pain such as gastric and duodenal lesions. Duodenal ulcer with slow perforation at times very closely simulates gall-stone disease. Some roentgenologists claim the ability to determine a high percentage of gall-stone shadows, and I firmly believe that the time is not far off when gall-stones will be almost as accurately diagnosed by the X-ray as renal stones are today.

Frequently very accurate information may be obtained from the duodenal tube. By relaxing the sphincter of Oddi, bile from the common duct can be obtained and this finding is very valuable in all cases where any infection is present in the duct. Of course, in stones confined to the gall-bladder, the bile is frequently sterile, and little help will be obtained in such instances. While the same is frequently true in common duct stones, there is usually a time, however, when careful observation will show a rise in temperature, if only for a few hours, possibly slight jaundice, and, if the duodenal tube collects the

¹Read before the Buffalo Academy of Medicine, April 7, 1920.

that was all the placenta that was passed. She had no bleeding, nothing to interfere with her convalescence.

Dr. Curtis wants to know what persistent bleeding means. Some of these cases come in with the uterus practically empty, in others, it is not quite empty. When a patient bleeds for more than 6 days in the hospital, we regard that she has gone over time and we consider the uterus empty. We consider that the persistence of lochia over 6 days is an indication for curettage.

In answer to Dr. Heaney, in quite a few of these cases we find nothing to account for the bleeding.

Dr. Carv mentioned the question of neisserian infection. I would say it is a rather safe procedure to curette a patient in the presence of a neisserian infection that cannot be diagnosed, but still may be present somewhere in the uterovaginal tract.

As far as Dr. Doedleren's case is concerned, I should be inclined to treat the peritonitis and not the septic abortion. I think it would not help matters in such a case to go inside of the uterus. I

have in mind one case where the patient went to an abortionist, who infected the uterus. First she had tenderness and temperature reaction. Then she came to the County Hospital, where she was put to bed until the temperature subsided. We believed it was an infection of the cervix because the abortionist did not succeed in completely bringing about the abortion.

In regard to Dr. Paddock's objection to the size of the placenta, the patient saw two pieces and the interne one.

I have almost reached the conclusion that spontaneous abortions if left alone will never be the cause of a serious infection. I believe a placenta left in the uterus will not cause an infection that is serious. Polak, of Brooklyn, leaves the placenta in for several days if necessary. I am not familiar with the details of his procedure. I do not know that he had cases where it was left in indefinitely. Williams had a case where he left in a full term placenta and never found it. I am coming to the opinion that it would be safe to leave a clean placenta in the uterus indefinitely.

CORRESPONDENCE

PERTROCHANTERIC FRACTURE OF THE FEMUR

To the Editor: In following up cases of fracture of the upper end of the femur treated during the past 20 years at the surgical clinic of the University of Amsterdam, I came across such a striking example of pertrochanteric fracture of the femur, a condition so well described by Dr. Abraham O. Wilensky in an article on that subject in the March,

hip. At some distance beneath the crest of the ilium could be felt a bone-point beneath the skin. Pressure in the region of the neck of the femur was very painful. Slight rotation produced crepitation. A roentgenogram showed an intertrochanteric fracture with the shaft of the femur dislocated forward, the upper fragment turned upward.

Both extremities were placed in extension, in adhesive plaster bandages. Convalescence was complicated by sloughing and pneumonia. On February 3, traction was discontinued. On March 18, the patient was given her first walking exercises. On April 24, she was dismissed from the hospital, at which time she walked fairly well although with some stiffness of both hips, more marked on left side.

On April 7, 1920, the patient returned on request. At this time the gait was almost normal but the patient complained of pain in the left hip. Examination showed all joints perfectly movable. It could not be determined whether or not shortening had taken place as both femurs had been broken. A roentgenogram showed the dislocation to be insufficiently corrected.

DR. W. F. WASSINK.

Amsterdam, Holland.

extremities. She was taken to the hospital. On entrance her pulse was scarcely perceptible (50), and she complained of pain in the head and legs. After a time the pulse improved, although the rate was but 46. The next day the pulse rate was 90 and remained at this point without alteration.

Examination showed a hematoma above and back of the left ear. The pupils were unequal, the left somewhat larger than the right. Reaction to

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stricture. The telltale clear mucus without bile, is positive evidence of obstruction to the cystic duct, whether it is present at operation or comes on later, following cholecystostomy. Cholecystectomy is imperative in every case of stone in the cystic duct. In common duct stones the problem is not so simple. Reasoning in a similar way, stone in the common duct ought to be followed by stricture, and if so, the gall-bladder ought to be left for an anastomosis with the duodenum, so the bile could pass around the stricture. Courvoisier's law — that obstruction inside the duct gives a contracted gall-bladder — is probably true in about 85 per cent of cases. The reason is, of course, plain, because before the stones reach the common duct they have produced an old contracted gall-bladder. So the argument does not hold good for common duct stones: first, because the common duct always dilates, making ample room for the stones, so contraction does not occur; and secondly, even though it did, an old contracted gall-bladder could not be used for an anastomosis.

The conditions described are not always present. In cases of stone in the common duct with a fairly normal gall-bladder, one might consider a simple cholecystostomy, but since we find a diseased and contracted gall-bladder in 85 per cent of these cases, even here, cholecystectomy is the operation of choice. One must learn to palpate the common duct accurately so that he can be positive whether stones are present or not. In some instance it may be necessary to open the common duct and introduce a probe or finger, positively to determine the presence or absence of stones, but I think stones can be detected in most instances by introducing the finger into the foramen of Winslow, and milking the duct between the fingers.

I always drain in the presence of stone in the common duct. Usually a catheter with an open end is introduced into the hepatic end, and fastened with catgut. I also try to plug around it with oil silk, to prevent leakage. All drains are removed early, the oil silk in 24 hours, the catheter as soon as the catgut sutures will permit — usually 5 or 6 days. I have never seen stricture of the common duct follow these operations.

Recently I have analyzed all the gall-bladder cases of which I have accurate record. There were slightly more than 252 operations, of which 117 were cholecystostomies, and 135 were cholecystectomies. Every case dying in the hospital was considered an operative death. In the 117 cholecystostomies, there were 7 deaths, 5.9 per cent mortality; and in the 135 cholecystectomies there were 6 deaths, a mortality of 4.4 per cent. In my earlier work, cholecystostomy was used in such favorable cases as uncomplicated gall-stones and cholecystitis without stones, but in later years all these were treated by cholecystectomy. The mortality in each of these procedures will depend largely upon what operation is used in the complicated cases — as those deeply jaundiced, perforation with or without walling off, and cancer of the pancreas. Perforations produce an estimated mortality of 33 per cent. This does not seem possible, but it was true in my cases, and Deaver mentions the high mortality due to perforations in a large series of cases. Cancer of the pancreas in my hands has a very high mortality, if the patients are allowed to stay any length of time in the hospital. The duration of life in cancer of the pancreas following drainage is short, and I doubt the advisability of any operative procedure except where the diagnosis is in doubt. One hesitates positively to condemn a deeply jaundiced patient without exploration, because the difficulty of diagnosing between cancer of the pancreas and stone in the common duct is sometimes quite marked. Where one is satisfied of the diagnosis of cancer of the pancreas, however, I am of the opinion that the patient lives longer without surgery. The cancer cases were all treated by simple drainage which explains the high mortality of cholecystostomy. Of the 7 deaths, 4 were due to cancer of the pancreas, leaving 3 deaths to other causes; perforation, or one case where acute peritonitis had already been established, common duct stone in a very old man with damaged kidneys, and presumably angina pectoris, in a patient subject to attacks of this malady, although no autopsy was allowed. In further analyzing these cases, if we eliminate cancer of the

PERTROCHANTERIC FRACTURE OF THE FEMUR

To the Editor: In following up cases of fracture of the upper end of the femur treated during the past 20 years at the surgical clinic of the University

RICS, that

On December 10, 1911, a patient, intoxicated, fell downstairs, and injured both lower extremities. She was taken to the hospital. On entrance her pulse was scarcely perceptible (50), and she complained of pain in the head and legs

back of the neck. The left leg was somewhat larger than the right. Reaction to light and accommodation was normal. The left leg was held in outward rotation, and there was a swelling in the iliac region extending to the knee-joint, the greatest swelling being just below the

hip. At some distance beneath the crest of the ilium could be felt a bone-point beneath the skin. Pressure in the region of the neck of the femur was very painful. Slight rotation produced crepitation. A roentgenogram showed an intertrochanteric fracture with the shaft of the femur dislocated forward, the upper fragment turned upward.

Both extremities were placed in extension, in adhesive plaster bandages. Convalescence was com-

On February 18, the patient was able to do exercises. On March 18, she was discharged from the hospital, at which time she walked fairly well although with some stiffness of both hips, more marked on left side.

On April 7, 1920, the patient returned on request. At that time the gait was almost normal but the

Examination showed that the left hip was stiff. It could not be flexed. The patient was unable to walk. A roentgenogram showed the dislocation to be insufficiently corrected.

Amsterdam, Holland.

DR. W. F. WASSINK.

In certain instances there seems to be special indications for biliary drainage, and for many surgeons this is the factor deciding in favor of cholecystostomy. In answer I would say: (1) Most indications for biliary drainage disappear with removal of the gall-bladder. (2) Ample drainage can be established by a tube in the cystic or common duct. (3) Probably a very efficient drainage is established through the common duct when cholecystectomy is done.

In the performance of cholecystectomy there are a few essentials which I regard as absolutely necessary to success: (1) accurate dissection of the cystic duct so that one may see it, and know that he is tying it, and tying nothing else; (2) absolute control of hemorrhage; (3) complete removal of stones from both the cystic and common duct; (4) in uncomplicated cases a small strand of oil silk placed down to the cystic duct; (5) in common duct stone, a tube drain inserted in the common duct. Many may question the fourth point, but I have seen so many cases where a small collection of bile formed around the cystic duct—probably from under the surface of the liver—which produced a temperature about the eighth or tenth day, that I now drain every case. I am quite sure also, that I have seen less disturbance in the chest, since draining all these cases. When these details are carried out, I do not think the mortality in uncomplicated cholecystectomy will be much greater than in simple appendectomy.

From my own experience, I am quite sure that the operation of cholecystectomy has not a sufficiently increased risk to condemn it for that alone, as is frequently done. The question has to be decided on the percentage of ultimate cures. Judged from this standard I leave it to all unbiased observers to decide which is the operation of choice. For myself, the percentage of cholecystectomies has increased yearly, until now I rarely do a cholecystostomy in the presence of gall-stones in any locality.

CONCLUSIONS

1. All gall-stones have their origin in a primary cholecystitis.

2. Typhoid bacilli is present in only 7 to 10 per cent.

3. The mode of transmission of the primary infection is not positively determined. I am of the opinion that it is almost always carried by the blood stream, and rarely, if ever, by direct extension. It is probably more frequently associated with a primary lesion elsewhere in the abdomen.

4. A diseased appendix is very frequently present when stones are found in the gall-bladder. It is probably the cause of the primary cholecystitis in more instances than is commonly believed.

5. Gall-stones are rare in young people. In less than 15 per cent was the patient under thirty years, while over 60 per cent occur between the age of 30 and 50 years.

6. Jaundice has received too much emphasis as a diagnostic symptom. Probably when the primary cholecystitis is present, a goodly proportion have a mild jaundice, but it is slight and usually forgotten. Stones in the gall-bladder or the cystic duct produce jaundice, only by pressure on the common duct, or by associated cholecystitis.

7. Attacks of pain in right upper quadrant is most frequent symptom of stones.

8. Cholecystectomy is the operation of choice where there are stones in the gall-bladder or cystic duct. It is probably the operation of choice where stones are in the common duct, if one is positive all stones have been removed, because stones in the common duct are so often associated with old contracted gall-bladder.

9. The mortality from cholecystectomy is now sufficiently low so that decision for or against the operation should be judged largely by the percentage of ultimate cures.

10. In cancer of pancreas, the mortality is so high that operative procedure is prohibitive. If operation be done, anastomosis between gall-bladder and stomach is the one of choice.

head of the editorial board, Dr. George W. Kosmak, and as associate editor, Dr. Hugo Ehrenfest.

Nothing can demonstrate the worth of this first number to greater advantage than the presentation of its table of contents:

ORIGINAL COMMUNICATIONS

A Program for American Gynecology Presidential Address

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The Induction of Labor at Term By Charles B. Reed, M.D., F.A.C.S., Chicago

The Prophylactic Forceps Operation By Joseph R. DeLee, M.D., F.A.C.S., Chicago

Extrapertoneal Cesarean section By John A. McGinn, M.D., M.S., Philadelphia

Cranial and Intracranial Birth Injuries. By Harold Bailey, M.D., F.A.C.S., New York City

SOCIETY TRANSACTIONS

American Gynecological Society Forty-fifth Annual Meeting

Analgesia and Anesthesia in Labor By Edward P. Davis, M.D., F.A.C.S., Philadelphia

Based upon the Study of 2517 Consecutive Observations By J. Whitridge Williams, M.D., F.A.C.S., Baltimore

Chicago

England

DEPARTMENT OF REVIEWS AND ABSTRACTS

Collective Review—The Prophylaxis and Treatment of Puerperal Infections. By Hugo Ehrenfest, M.D., F.A.C.S.

Selected Abstracts—The Bacteriology and Chemistry of the Vagina

BOOKS RECEIVED

Books received are acknowledged in this department

space permits

by

Dr

Be

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TRATADO PRÁCTICO DE RADIOLOGÍA. By Dr Carlos Heuser. Buenos Aires 1920.

OPERATIVE GYNECOLOGY. By Harry Sturgeon Crossen, M.D., F.A.C.S. 2d ed. St. Louis C.V. Mosby Company, 1920.

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PHYSIOLOGY

CINE. By

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Cassell & Co., Ltd

CLÍNICA QUIRÚRGICA Y TÉCNICA OPERATORIA By Dr J. A. Presno y Bastiony Havana, 1920

THE AMERICAN RED CROSS IN THE GREAT WAR. By Henry P. Davison Chairman of the War Council of the

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Figs. 1. and 2 Retroperitoneal sarcoma.

inside nipple line. There is no enlargement to the right or left. Sounds are clear and distinct at apex and base, there are no murmurs, shocks, or thrills present. In the lungs there are no areas of impairment made out on percussion. Breath sounds present nothing unusual in character throughout both lungs. There are no râles.

With patient in recumbent position, examination of the abdomen shows a large, well defined mass, which is movable to a slight degree, is visible—no abdominal pulsation noted. Swelling extends from umbilicus to 4 centimeters from symphysis pubis, and about 5 centimeters to right and left of median line at greatest width. It is about the size of a large head of cabbage and gives one the impression of being similar to a 6 months' pregnancy. On palpation it is found to be rather firm, nodular, and slightly movable under the skin, enough to assume its separation from the skin. The mass can be palpated laterally as far down as it is possible to feel and gives one the impression it is attached posteriorly. No pain is elicited anywhere on pressure of tumor and no area of fluctuation is felt. The intestines are palpable to right and left of growth and on anterior lower border (Steele's observations). It is dull to percussion except over lower anterior border where a tympanitic note is elicited. Auscultation reveals nothing. The liver, spleen, and kidneys are not palpable, and there is no tenderness in any abdominal quadrant.

The external inguinal rings on both sides easily

guinal and femoral glands are palpable, but no

remarkable enlargement is present. Axillary and epitrochlear glands are not palpable. Knee kicks, Achilles, supinator, biceps and triceps reflexes are present, but not increased or diminished, umbilical and cremasteric present and active, Babinski, not present.

The temporal, brachial and radial arteries are palpable, but show no evidence of arteriosclerosis.

Radial pulse is regular in rate under good tension, and has good volume. Blood pressure, systolic 140, diastolic 90.

Examination of urine shows, color, amber, reaction, acid to litmus paper, specific gravity, 1.024; albumin, none; sugar, none; bile, none. Microscopic examination shows epithelial cells and a few white blood corpuscles.

Routine Wassermann examination of blood, negative. Red blood corpuscles 4,000,000, white blood corpuscles, 12,400; hemoglobin, 80. Differential count, polymorphonuclears, 76.3.

Polymorphonuclear basophiles, 7; polymorphonuclear eosinophiles, 2.7; large lymphocytes, 7.3; small lymphocytes, 22.

Diagnosis Spindle cell sarcoma. (Figs 5 and 6).

In 1904, J. Dutton Steele (1), in a classical article, reviewed the literature on retroperitoneal sarcoma and collected 96 cases, including those under his personal observation. This review was his second paper upon the subject; his first appearing in 1900, when he reported 61 cases. During the intervening 4 years he collected the remaining 35, some of which had been overlooked, or had been inac-

One result of it, too, is that it swiftly submerges personal prejudices among doctors and unites them under those bonds which have always made the profession great."

Again, the *World's Work* last spring assigned to an investigator the task of making a report upon the effect of the minimum standard among hospitals. This report was published in the magazine for June, 1920. With regard to the minimum standard, the writer, Mr. Hawthorne Daniel, says in part:

"The statement is simplicity itself, and yet, with all of its simplicity it contains just the sug-

necessary operations, just the suggestions that bring about the conscientious care that every patient in every hospital has a right to expect.

"From coast to coast the idea is changing the conditions in hospitals. Everywhere there is the ferment of development, the activity of improvement. In great centers of medical affairs the changes have been startling. In Baltimore, the greatest center of medicine in America, there is not a hospital of 100 beds or more that has not put into effective operation the minimum standard.

"In New York and other cities the hospitals have made almost as great an advance. The world of the hospital is changing. An advance normally to be expected in twenty years has come in three. For this opinion I am indebted to President Henry S. Pritchett of the Carnegie Foundation.

"The medical profession generally is to be congratulated upon the progressive work being accomplished by its many prominent members who are Fellows of the American College of Surgeons. In its membership the College includes the best men in the field, and there are few prominent surgeons in the country who are not on its roll.

"The medical profession is largely made up of men who are practical idealists. Sometimes, under the forces of circumstances, some of them may not have held entirely true to their own ideals, but it seems difficult to believe that many of them have ever allowed their ideals completely to lose control. And with the program of the

renewed and increased their efforts to bring about the reforms in which they always have believed.

"It is with this elusive force that the College has worked with such success. With the ideals

of the profession visualized, and with practical plans made to insure their application, the country may confidently look forward to a new era that is already partly here; when the hospitals of America will be institutions for service, from which selfish interest and careless methods have been abolished, and to which the country may look for considerate and efficient treatment, confidently expecting and receiving the utmost that the medical profession is capable of giving."

THE MINIMUM STANDARD

The standard provides:

1. That physicians and surgeons privileged to practice in the hospital be organized as a definite group or staff. Such organization has nothing to do with the question as to whether the hospital is "open" or "closed," nor need it affect the various existing types of staff organization. The word *staff* is here defined as the group of doctors who practice in the hospital inclusive of all groups such as the "regular staff," the "visiting staff," and the "associate staff."

2. That membership upon the staff be restricted to physicians and surgeons who are (a) competent in their respective fields and (b) worthy in character and in matters of professional ethics; that in this latter connection the practice of the division of fees, under any guise whatever, be prohibited.

regulations, and policies specifically provide:

(a) That staff meetings be held at least once each month. (In large hospitals the departments may choose to meet separately.)

(b) That the staff review and analyze at regular intervals the clinical experience of the staff in the various departments of the hospital, such as medicine, surgery, and obstetrics; the clinical records of patients, free and pay, to be the basis for such review and analyses.

4. That accurate and complete case records be written for all patients and filed in the hospital, a complete case record being one, except in an emergency, which includes the personal history, the physical examination, with clinical, pathological, and X-Ray findings when indicated; the working diagnosis; the treatment, medical and surgical; the medical progress; the condition on discharge with final diagnosis; and, in case of death, the autopsy findings when available.

5. That clinical laboratory facilities be available for the study, diagnoses, and treatment of

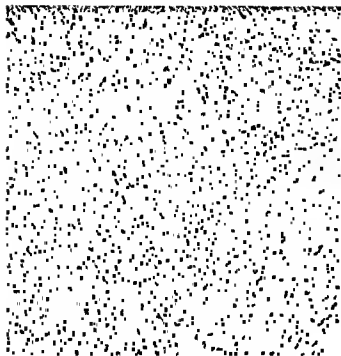


Fig 5 Low power photomicrograph of tumor.



Fig 6 High power photomicrograph of tumor.

from in August, 1916, when she was apparently in good health, with no signs of local recurrence or metastases. A microscopical diagnosis of spindle celled sarcoma was made at the time of operation, but, unfortunately, neither the slides nor specimen is available for such a confirmation as is now desirable, especially after an apparent recovery of a rapidly growing malignancy. The duration of this growth was 8 years, with a rapid increase, 2 months prior to operation.

The fact of the largest growths having given the best prognosis leaves room for the conjecture that these tumors might have been removed in a transitional period, when a benign growth was degenerating into a malignancy. This surmise is further strengthened by the fact that all three of these cases existed over a period of years, not months, before increasing rapidly in size. It is also possible there might not have been a microscopical confirmation of the operative diagnosis.

The other cases collected were reported by Sheldon and Corbett (7), Munro (8), Johnston(9), and Balloch (10).

As we have said before, we believe Steele's article is still the premier classic upon this subject and during the intervening 16 years

since its publication, nothing new has been offered that would in any way alter his conclusions. Regarding his seventh point, C. F. Burnam, of Baltimore, has had some very remarkable results in treating sarcomata with huge doses of radium, and when considering the universally unsatisfactory terminations of the definitely malignant retroperitoneal tumors after operations sufficiently extensive to remove completely the growth, it, indeed, brings up the question if it would not be better to use this agent either in conjunction with surgery (by removing the growth as far as condition of patient and the anatomical consideration will permit with safety and then implanting the radium, to be withdrawn through a tube left *in situ* after sufficient dosage has been obtained), or rely entirely on tremendous doses of radium. Certainly if the growth is clinically malignant, as evidenced by a sudden rapid increase in size; the condition of the patient not good, as is usually the case; and one is able to obtain sufficiently large doses of radium, then we feel the surgeon is justified in, at least, trying this method before resorting to surgery. Of course, when used with surgery, a definite microscopical diagnosis is possible and, while

ILLINOIS

Evanston Hospital, Evanston
 *Frances E Willard National Temperance Hospital,
 Chicago

MARYLAND

St Agnes Hospital, Baltimore
 St Joseph's Hospital, Baltimore
 University Hospital, Baltimore

MASSACHUSETTS

INDIANA

MICHIGAN

IOWA

KANSAS

*St Francis Hospital, Wichita
 St Margaret's Hospital, Kansas City

KENTUCKY

MINNESOTA

LOUISIANA

MAINE

*Eastern Maine General Hospital, Bangor

MISSISSIPPI

*Matty Hersee Hospital, Meridian

DEPARTMENT OF TECHNIQUE

AN INSTRUMENT FOR THE APPLICATION OF RADIUM TO TUMORS OF THE BLADDER

By WILLIAM H. WOOLSTON, A.B., M.D., CHICAGO

VARIOUS instruments and methods have been devised and used in radiumtherapy as applied to the bladder. It is unquestionably true that the application of radium by some method other than through a suprapubic cystotomy would facilitate matters to such a degree that it would be used with greater safety to the patient and, therefore, more frequently than it is at the present time. Radium needles have been used in carcinoma of the bladder but there is the risk of losing the needles, and the method is successful only when the needles can be applied to an easily accessible tumor. Lewis, of Baltimore, has invented a very ingenious apparatus for the implantation of radium emanation points and has successfully treated tumors of the bladder in this manner. Some surgeons have found, however, that a slough occasionally develops where the glass capsule containing the radium comes in contact with the tissues, since the capsule is not removed but is allowed to remain in the tissues permanently.

By the use of the instrument which I shall describe, the radium in a platinum, silver, or gold capsule may be attached to the tumor of the bladder through a direct operating cystoscope. It is allowed to remain for the desired length of

time and is then easily removed without more discomfort to the patient than is experienced in the usual cystoscopic examination.

The capsule is made of platinum, silver, or gold, preferably of platinum, since the use of a dense metal permits the capsule to be correspondingly thin. The end of the capsule has the clip attachment made of a watch spring, as illustrated (Fig. 1 and Fig. 2c). Its points are sharp so that they grasp the tissues firmly. The arms of the clip, which cross each other forming a figure-of-eight, are firmly imbedded in the end of the capsule. When drawn into the forceps the closed end of the figure-of-eight is compressed, opening the jaws of the clip. The opposite end of the capsule resembles that of any other capsule having a screw end and an eyelet for the attachment of a strong silk cord or fine wire.

The forceps used to attach the capsule to the bladder wall has a hollow cylindrical shaft about 14 inches long with a hollow obturator or plunger. This type of instrument has proven to be most successful.

Another type of forcep is one with a shaft of small diameter to the end of which is screwed a cylinder about 1½ inches long and of sufficient

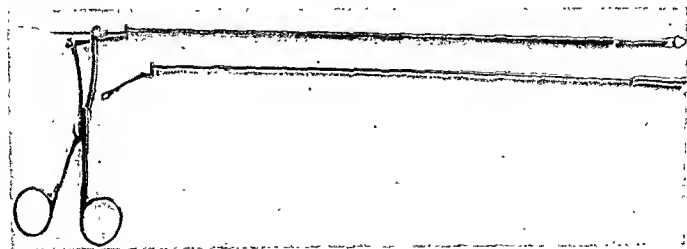


Fig. 1. Photograph of cystoscope showing capsule with clip attachment by means of which the capsule is held in desired position.

just above the tumor on the normal mucosa so that the capsule itself hangs over on to the growth, or attachment may be made to the tumor itself if it is large enough. Sufficient capsules to cover the entire tumor may be applied if desired. The guide of silk thread or fine wire obviates a search for the capsule and is necessary to engage it in the instrument upon removal.

This method of application may also be of value in tumors of the esophagus and otherwise inaccessible locations.

The suggestions and advice of Dr. Allen B. Kanavel have led to this method of the intravascular use of radium and the development of this instrument which has been used in his clinic at Wesley Memorial Hospital.

FINGER AND TOE NAIL EXTENSION

By J. E. M. THOMSON, M D, LINCOLN, NEBRASKA

OF the methods of applying traction to the fingers and toes for various conditions necessitating such procedure, each has its drawbacks. However, the use of nail extension has overcome, to a great extent, certain disadvantages of other methods.

That of narrow adhesive plaster strips applied to the fingers in a manner similar to that of applying adhesive for leg extension is perhaps used most universally. Yet in the hands of one who is not aware of the untoward effects of its wrong application, serious ischemic damage to the digits may result. It has been my sad fortune to see cases of gangrene of the finger due to binding adhesive strips, in which amputation of a portion of the finger necessarily followed. Further, when extension is desired for the last phalanx or for the articulation of the second and third phalanges, it is indeed difficult to facilitate adherence of the plaster strips to such a small area.

Both in the army and on returning to civil practice it has been my custom whenever possible to use a so-called finger or toe nail extension. A small hole is bored through the center of the nail, just beyond the skin, care being taken not to injure the soft tissues or cause any hemorrhage under the nail. Through this hole is drawn a strong silk thread.

For fractures of the toes, a rather heavy wire, bent in the shape of an arch about the width of the foot, is embedded in a foot cast, the arch extending beyond the toes about 2 inches. Over the arch are tied the threads from the nail (Fig. 1). Traction may be regulated with a twisting stick. A similar extension arch may be used on the hand when multiple extensions are desired. However, in the case of single extension, a splint exactly similar to the Thomas knee splint, but in proportions that are adaptable to the length and circumference of the injured finger, has proved a most prac-

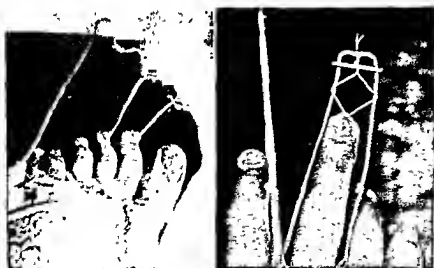


Fig. 1. Illustrating mild traction. - Fig. 2 Strong traction applied



Fig. 3. Flexion of finger.

THE GREAT MACE PRESENTED TO THE AMERICAN COLLEGE OF SURGEONS BY THE CONSULTING SURGEONS OF THE BRITISH ARMIES

THE ceremony of presenting the Great Mace to the American College of Surgeons was an occasion of much interest to the Fellows of the College who were in attendance at the initial meeting of the tenth annual session of the Clinical Congress, held in Montreal.

The presentation committee consisted of Sir Berkeley Moynihan, KCMG, CB, Leeds, England, Sir William Taylor, KBE, CB, Dublin, Ireland; and A. Carless, CBE, London, England. In making the presentation, Sir Berkeley Moynihan, chairman of the committee, said:

"Three centuries ago, on this very day, a little sailing vessel, leaving England far behind her, was struggling against adverse winds and heavy seas toward America. On board were one hundred pilgrims fleeing from civil and religious tyranny to seek sanctuary and freedom in a new land. No voyage in history has been so fateful. Those who journeyed in that vessel, a chosen company on the horizon of your history, were the best of English stock. They helped to found here a small colony of people, grim and stoical in spirit, yet touched with idealism. Though all the great countries of the earth have since given of their best to build this nation, those few pilgrims have left their indelible stamp upon the culture, the institutions, and the laws of this land.

"Almost a century and a half ago that Colony broke away from the Mother Country with which it was long at war. But one hundred years of peace between the two nations had been celebrated when in 1917 they stood together in arms. War is the great Revealer. We learned in that great testing time of our race that ties of blood when they mean kinship in spirit and an equal surrender to the noblest impulse are never to be broken. In the Great War, America and the Empire mingled their blood upon the same stricken field. The hope then grew strong in many hearts that a new understanding born of comradeship in battle, fiercely tested in the furnace of affliction, and sealed in death, would redeem the ancient blunders, blot out the bitter memories of wrong, and lead at last to a supreme and permanent reconciliation. For we seemed then to realize that deep down in the hearts, enthroned in the conscience of the two peoples there was the

same full eager devotion to eternal principle, love of justice, joy in liberty, hatred of oppression; the same unselfish determination to strive for the redemption of mankind and to establish anew the freedom of the world. On the fields of Flanders and of France, as in the cabin of the Mayflower, humanity recovered its rights.

no joint labors more fruitful than those of the members of our profession coming from America and from every part of the British Empire. We then gained each for the other, not respect and sympathy alone; but true affection also. Every lover of his country; every lover of Humanity must wish that the spiritual alliance then created shall endure to the end of time. In our desire to perpetuate the remembrance of those days of duty done together, we, the consulting surgeons of the British Armies, ask the College of Surgeons of America, meeting in this great Dominion to accept this Mace. We pray that you may regard it as a symbol of our union in the harsh days of trial; as a pledge of our devotion to the same imperishable ideals; as a witness to our unflinching and unchanging hope that the members of our profession in the two lands shall be joined in brotherhood for ever in the service of mankind."

The President of the College, Dr. George E. Armstrong, of Montreal, responding said:

"Sir Berkeley Moynihan, as President of the American College of Surgeons, I accept this beautiful Mace presented by you on behalf of the consulting surgeons of the British Armies, with thanks and with full appreciation of the care and thought bestowed upon its design and construction. We accept it as a token of the cordial relationship that obtains between the surgeons of the two great nations here represented. It is a symbol of the zeal and enthusiasm in our art, which, arising in the Old World, has spread to the New World. We shall endeavor on this Western Hemisphere to keep the sacred flame of science burning not less brightly than did our forebears in Great Britain. It will remain with us as an emblem of unity, a work of art, and a remembrance of the great effort of the two great English-speaking nations to give truth,

round ligament. The psoas tendon is now looped around the origin of the round ligament and sutured with linen or silk. A reef is taken in the round ligament so as suitably to shorten it, the suturing being done in such a manner as to cover over the attachment of the psoas tendon to the round ligament, leaving all structures with a peritoneal covering. The peritoneal incision in the iliac fossa is then inverted with a few catgut stitches. An identical technique is followed on the opposite side, and the abdominal wound is closed in the usual manner. Sometimes it is advisable to leave the shortening of the round ligament until after both psoas tendons have been attached as outlined above. This leaves the uterus in a perfectly normal position with its whole weight and that of its attachments swinging freely in the pelvis on four guy ropes, the posterior two of which are made up of the psoas parvus tendons and the anterior two of the shortened round ligaments.

Technique 2. A band of the fascia lata $1\frac{1}{2}$ inches wide by 8 inches long is taken from the right thigh and immersed in normal salt solution. The abdomen is opened as in Technique 1. The psoas parvus ligament is cut down upon, identified, and raised into the abdominal cavity. The peritoneum covering the iliac fossa and broad ligament is dissected loose, a strip of fascia lata $\frac{3}{4}$ inches wide is looped over the psoas tendon, and sutured with silk or linen. The free end of fascia is then drawn subperitoneally through the broad ligament, brought out at the origin of the round ligament, carried around the round ligament, and sutured in place with silk or linen. The round ligament is then shortened as in Technique 1, the incision in the peritoneum over the psoas tendon is closed, the same technique followed on the opposite side and the abdominal incision closed. The connective-tissue structures which carry the weight and the sutures are all buried under a peritoneal covering so that no adhesions ensue. The whole proceeding is simple, the operation may be done rapidly, and the surgical principles involved are all well established.

Technique 3. It is, of course, understood that the sphincter is suitably shortened before this operation is performed. Then a week after the first operation the abdomen is opened by right rectus incision, the right psoas parvus tendon dissected free, followed to its pelvic attachment, and severed. The peritoneum is dissected free from the iliac incision over the psoas tendon to a point beside the rectum and 2 inches below the

promontory of the sacrum. The free end of the psoas tendon is carried subperitoneally to the mid-line and sutured into the longitudinal line of the rectum with three stitches of linen or silk. This suture line is now covered over with a fold of peritoneum and the abdominal incision is closed.

CASE 1 Mrs J. McD., American, age 42, mother of 3 children, 2 living, was afflicted with a prolapsus uteri of such degree that the uterus at times was entirely in the outer world. This was complicated by a rectocele and a moderate degree of a cystocele. She was operated on February 14, 1919. The hypertrophied cervix was amputated and the cystocele and rectocele were corrected

except slightly higher in the abdomen. Apparently the

dragging sensations and she leads a very active life. She

uterine body in outer world. Cervix very much elongated and hypertrophied, dimension of cervix equal to that of the uterine body, and the length of cervix practically 4 inches. Operated on March 1, 1919. Cervix amputated and perineorrhaphy done March 8, 1919. Technique 2 was employed. This patient seen latter part of February, 1920. Today she is in good health, has gained decidedly in weight, and the uterus is in normal position. No dragging sensation and no reflex symptoms are present. The first several months this patient was annoyed with drawing sensations. As she expressed it "the sides of the pelvis were drawn together." The last 6 months this has entirely disappeared.

CASE 3 Mrs J. W. A., age 60, mother of 6 children, badly lacerated perineum, relaxed sphincter and a prolapse of the rectum about 4 inches in length, which condition has been in existence for about 10 years. She was operated on July 7, 1919. The bowel was returned, the sphincter shortened by being dissected free, following a perineal incision around the anterior half of the anus, then a reef was taken in the sphincter on each side, the mucous membrane of the vagina was dissected free, the fascia of

so second operation was done on July 20, 1919. Technique 3 was followed in this case as outlined above for prolapsus recti. At this date, the patient has had no recurrence whatever of the extrusion of the bowel and has perfect control of her bowel. For many years she was unable to leave her home. Now she is apparently in the best of health and is able to go out on the streets.

ocean which both unites and separates America and the Mother Country. The latter is symbolized by the British lion brackets of highly chiseled work which support the head and terminate the upper part of the staff. The talons of the lion's feet grip the hammered decoration of the upper knop, which consists of a design of American and Canadian maple seed-pods and heart-shaped spaces. This hammered work is protected by boldly projecting, solid, jewel-like bosses of chiseled work.

The staff is decorated with a free design of the national floral emblems of the United Kingdom—the rose, the thistle, the shamrock, and the leek. Intertwined among these are a number of ribbon scrolls, each one of which bears the name of one of the donors.

The foot bears, as decoration, the root form from which the above spring and a series of six small shields which may be used for possible future arms or inscriptions. The extreme bottom knop is fluted with leaves of *Isatis Tinctoria*. "In the beginning there was Woad."

The various parts are held together, in the traditional manner, by a rod of English oak, cut from a tree grown at Wytham, Berks. The extreme length is 3 feet 21½ inches, and the weight of silver is 140 ounces troy.

List of the consulting surgeons of the British Armies who have given the Great Mace to the American College of Surgeons:

Sir Charles Ballance, K.C.M.G., C.B.

Sir Hamilton Ballance, K.B.E., C.B.

Sir Gilbert Barling, Bart., C.B.

Seymour Barling, C.M.G.

Sir Anthony Bowlby, K.C.B., K.C.M.G., K.C.V.O.,

D.S.M. (U.S.A.).

Dr H. Bruce

F. Burghard, C.B.

H. Burrows, C.B.E.

A. Carless, C.B.E.

Sir Arthur Chamer, C.B.E.

C. C. Choyce, C.M.G., C.B.E.

Sir Kennedy Dalziel

R. Davies-Colley, C.M.G.

T. P. Dunhill, C.M.G.

J. M. Elder, C.M.G.

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DISCUSSION

DR. WATKINS: I consider this paper a very interesting and valuable study of the subject. I was rather interested that Dr. Hillis did not speak of the cases sent into the hospital after they had been curetted. My experience has been that a great number of cases that abort are curetted, become dangerously ill, and are then sent to the hospital. Such cases are difficult to classify under the groups given. The findings which he has given are what one would expect from the various methods of treatment.

Two papers have appeared in the last few years which have thrown a great deal of light upon this subject. One was by Dr. Sampson, of Albany, which probably most of you have read. It was presented before the American Gynecological Society last year. The veins of the uterus were injected with silver after the uteri had been removed, and beautifully illustrated the blood supply of the uterus and especially the sinuses that lie immediately under the endometrium. In another class of cases where the endometrium was curetted, he showed how the sinuses are opened by the curette, which is a very strong argument against curetting in the presence of infection.

Another interesting paper which has a bearing on this subject was presented by Dr. Curtis before this society some 3 or 4 years ago. He showed that the body of the uterus generally contained no bacteria, but the body of the uterus which was removed after curettage seemed invariably to show the presence of bacteria, that is, following curettage the bacteria gain access and infect the body of the uterus.

We are indebted to one of our members for pioneer work in this subject. Dr. Ries, many years ago, protested against intra-uterine treatment of septic abortions or sepsis after labor.

Much has been said about disturbing the leucocytic wall that protects the body from extension of infection; it seems to me the thing that is very much more important is the great danger of dislodging septic thrombi in the uterine sinuses. We all know that a thrombus is one of the best culture media for the growth of bacteria, and we know if we curette, we are almost certain to dislodge them. Personally, I can see no reason why one should curette the uterus except for diagnostic purposes. Now, no man would curette a sloughing wound of the back of the hand and yet that would be very much less dangerous than curetting a sloughing wound in the uterus. The hand has a strong resistance, whereas the puerperal uterus is undergoing involution, which is almost comparable to fatty degeneration and has a low resistance to infection.

I would not take exception to anything the Doctor said except this, that in infected cases with hemorrhage I would be very much more inclined to pack and allow the uterus to empty itself than to empty the uterus artificially. With sepsis and

hemorrhage, the uterus will empty itself very quickly if the vagina is thoroughly packed. Hemorrhage means that the decidua or placenta is already separating from the uterine wall and the pack will hasten the separation.

I entirely agree with the Doctor about the necessity of curetting aseptic cases in certain instances. You must be sure they are well when they go home. If you do not curette, you are not certain you are sending out a cured patient.

DR. PADDOCK. I remember well that 20 years ago, Doctor Ries advocated that an aborting uterus should be left alone except in the presence of hemorrhage. It required a great deal of courage for us to follow out his treatment. Then Professor Webster advocated packing the uterus with gauze, soaked in formalin and glycerin. All the time, however, Dr. Ries was continuing to advocate his treatment and many of us followed in his footsteps as much as we dared to.

I think this paper would be more valuable had we known something of the organisms present. I would not say that I would curette a case just to find out what organism was present. The farther I get away from curetting any case the better I feel. I let them alone as much as possible even though there may be some discharge for several days. I think we have got to take a pretty definite

stand in the changed economic conditions.

DR. BACON: I want to call attention to one point in the nomenclature. The essayist speaks of

From
ortions
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s made

by a second party or by the patient; if it is not a therapeutic abortion, it is a criminal abortion.

I would make the same point that Dr. Paddock did about the possible value of determining the bacteriological condition of the uterus at the end of 5 days of a non-febrile state. There is not very much doubt that the uterus is contaminated even if there has been no fever at all. Where there is good drainage from the uterus, there is much less likelihood of fever being present, that is, the fever in many of these cases is simply a question of drain-

at that time would not be dangerous.

I would perhaps differ slightly in the conclusions made by the author as to the importance of curettement in practically all afebrile cases. I think a day

cases, because it shortens the term in the hospital.

DR. EUGENE CARY: One question which I think should be considered is that of the complications

THE COLLEGE LIBRARY

A GIFT of inestimable value has been bestowed upon the Fellows of the American College of

inspiration to many who have not had the privilege of learning directly from the great teacher and surgeon

There is not a field in surgery which has not been profoundly influenced by Doctor Murphy's discoveries. His achievements in various fields—particularly in the surgery of the bones and joints, the abdomen, the vascular system, and the nervous system—were the product of a genius and skill seldom equaled. In the library which has passed on to us will be found many of the choicest scientific works with personal annotations indicating constant use. The fundamental branches of anatomy, physiology, and pathology are represented by some of the finest works produced in both America and Europe. The section on cancer is particularly complete. The surgical portion of the library is very comprehensive, including especially interesting collections on orthopedic, abdominal, and genito-urinary surgery in addition to the best of the general surgical monographs. Through the generosity of Mrs. Murphy, the leading surgical works published during the past four years have been added to the collection. The library will be exceedingly

useful for reference and research purposes, in that it contains bound files of the leading medical and surgical journals—American, English, and German—for the past 30 years, and some for even longer periods. The proceedings of the leading surgical societies are also represented. That Doctor Murphy was a true scholar with very broad literary and scientific interests is exemplified by the fact that various works on general science, biography, and excellent dictionaries and encyclopædias are included in this collection.

The clearness of his vision and complete knowledge of the work of those who preceded him have given to his scientific contributions rare qualities of permanence and originality. It is hoped that this library may form the nucleus for one of the best surgical libraries in the country, and that the library, together with the literary research department to be organized in conjunction with it, may help to spread the ideals of this great teacher and surgeon. It will be the aim of the department to further the standardization of literature on surgery and closely allied subjects, to help in the preparation of contributions to surgical literature, and to encourage the wider reading and study of scientific subjects through the more general establishment of hospital libraries and smaller literary research departments, thus perpetuating the scientific spirit which animated the life of the great surgeon

MEETINGS OF STATE CLINICAL SECTIONS

State sectional meetings of the Clinical Congress of the American College of Surgeons were held

19.

8 and

Utah—Salt Lake City, November 22 and 23.

Colorado—Denver, November 26 and 27.

Other state sectional meetings scheduled to be held in the immediate future are:

New York—Buffalo, December 3 and 4.

Illinois—Peoria, December 16, 17 and 18.

I would like to know if there are any cases on record of that kind. Also, if he has since looked up the literature.

DR. CURTIS: In experiments on rabbits which I conducted some few years ago, it was very easy to get an absorption of the entire fetus as well as of the placenta. I see no reason why that should not happen in the human.

DR. EUGENE CARY: I was called in consultation a month or two ago in a case where the fetus had been passed, but no placenta. It was a septic case. I was asked what to do and I suggested expectant treatment. The woman remained in the hospital under the observation of a nurse, and no placenta passed. She was examined by the attending physician the other day, and the uterus is back to normal and yet not placenta has been passed.

DR. HEANEY: I might contribute some information as to the non-absorbable character of the placenta. A patient was operated upon in Vienna when 8 weeks pregnant. After the operation she aborted, but the expelled parts were thrown away. She was examined upon dismissal from the hospital, but the doctor could not say whether the uterus was large normally or had still the placenta inside. She still had some discharge but no bleeding. She traveled through Europe and finally came to the United States. In the meantime she had excessive menstrual periods, hemorrhages at regular intervals. She finally passed the placenta, which she had carried for 3 months. I was called when she passed it. I palpated the interior of the uterus and it was empty. It is a question of considerable importance as to what should be done if the placenta does not come away immediately after birth. I have in mind a patient attended at St. Luke's Hospital by a former member of this society. The patient constantly had a low blood pressure under 100. As soon as the fetus was delivered she went into profound collapse. The placenta did not come away. She had no hemorrhage. The placenta remained inside for 3 days, I believe; then the doctor went in, in the absence of temperature, and removed the placenta. Then a profound sepsis developed and it was a question for some time if the patient would survive. I think if the placenta is going to be taken out, it should be taken out soon.

Inside the abdomen the placenta will develop as shown by the cases of so-called abdominal pregnancy, where the placenta is widely attached. I think under certain conditions the placenta is absorbed, but whether it is a safe thing to leave it in, is a question.

DR. HILLIS (closing): I will answer Doctor Heaney first. He takes exception to the general plan which includes curetting the uterus after being 5 days' temperature free. I think he has in mind the cases of septic abortion, which have, as we all have seen, some inflammatory reaction outside the uterus. Such a case as that is not a simple, septic abortion; it has some complications. According to our experience with this series of cases, in the ordinary case

that comes into the hospital with a temperature of 101° or 102° and runs such a temperature for a week, if it were curetted in the middle of this temperature the patient would most certainly become septic. When the temperature goes down to normal, and if the patient remains temperature free for 5 days, then it is safe to curette. Now the Doctor makes the comparison between the uterus and the throat, I have never curetted any throats but I have curetted a number of cases of this kind 5 days after the fever had gone and none of them showed any temperature reaction.

The non-operative cases on the operative list were, as Dr. Heaney suggests, cases where nobody would have the scientific enthusiasm to curette cases with a small amount of lochia, disappearing to a vanishing point within 3 days. If the case had not been curetted by that time, it would be left alone. Some of these cases have to be curetted and others not; in other words, we individualize the cases.

In answer to Dr. Watkins' question regarding packing the uterus to stop severe bleeding, it may be that there is less trauma connected with packing than there is with curetting. In some cases I think it is the better plan. However, there is considerable doubt in my mind as to which method would involve less trauma to the uterus.

Regarding the bacteria found, this question is in such a state of chaos, I shall do nothing more than to refer to it. There is a plan under way now at the County Hospital to make a bacteriological study of these cases of abortion.

That answers Dr. Paddock's question regarding bacteria. As far as his question in regard to a four months' pregnancy is concerned, 8 weeks ago a patient came into the ward with an extremely decompensated heart. She was in such a bad condition that we immediately put in a bag and emptied the uterus, she was 6 months pregnant. The fetus was expelled. Because of the condition of the heart the bag had to be put in, with the patient in the sitting position. When the fetus was expelled the placenta did not come down. I pulled down the cord, cut it off, and allowed it to retract, and put the patient back to bed. That was exactly the thing I should not have done. I was able to keep her from being curetted for 6 weeks. At the end of 6 weeks the question was whether or not she could go home. One day she had a temperature of 100° on three observations. At the end of 6 weeks, the

said she was menstruating. She menstruated for about a week and is enjoying very good health. I made a particular investigation of this case and

who said it was placenta. The patient also stated that she passed two other pieces of this kind; but

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BOOK REVIEWS

A CRITIQUE OF NEW BOOKS IN GYNECOLOGY AND OBSTETRICS

By GEORGE GELHORN, M.D., F.A.C.S., St. Louis

A NUMBER of foreign works on obstetrics and gynecology have arrived on the reviewer's desk during the summer vacation. Of these, a rate

is a matter of concern to all thoughtful observers and when the problem of repopulating a devastated world looms up as a gigantic task, the old question of artificial abortion assumes a new and even more urgent significance. It is plainly the duty of all obstetricians to see to it that thousands of potential lives are not sacrificed unnecessarily in addition to the millions that were lost in the war. Thus, then, is the time to take stock, as it were, of the present status of this subject, to gather in all available data, to utilize the results of scientific investigations and practical experience, and to formulate clearly and precisely the indications upon which a pregnancy may be interrupted prematurely. Which one of us has not sadly felt at times the need of such a comprehensive guidance—whether as teacher when he wanted to give his students an up-to-date instruction as to the proper course to pursue, or as practitioner when he could find in his textbooks only brief and generalized directions which could not possibly do full justice to the particular case he had in charge. To supply this want in our literature, to help the physician decide on a justifiable interruption of pregnancy, this is the aim of Winter's book. In the opening chapter which contains a general definition of indications, we learn that social and eugenic factors are completely eliminated and that solely medical principles must determine our actions. Pregnancy may produce or aggravate serious diseases. These, as a rule, are subject to intermistic treatment, and only if the latter fails, is abortion permissible as a last resort. The foundation of such an indication rests, first, upon the scientific recognition of a causal relationship between pregnancy and complicating disease, and second, upon the practical experience of the salutary effect of the artificial abortion. This viewpoint guides Winter and his co-authors in the following discussion which deals in great detail with all complicating diseases thus far observed in pregnancy. Winter's

conservatism is generally known. It is strongly reflected in his latest work. Whether the toxemias of pregnancy, respiratory, cardiac and renal diseases, or disorders of metabolism and of internal secretion are under discussion, or whether affections of the nervous and genital systems, or any other ills are considered—the predominant note is always one of caution not to draw hasty deductions, and a very large personal experience, the records of his university in titution, and all the available literature are invoked to arrive at the final conclusion. To give a few illustrations, Winter shares the general attitude toward tuberculosis of the lungs and larynx. In heart disease, too, the generally accepted therapy prevails in Koenigsberg. Chronic nephritis, in itself, is no indication for abortion unless previous intermistic treatment has failed. Exophthalmic goiter demands a medical therapy and, in case of its uselessness, a strumectomy, abortion is indicated only in extremely few cases. In osteomalacia, contrary to former views, interruption of pregnancy is not justifiable; rather should medical treatment or castration, even during pregnancy, be considered. The chapter on psychoses which has been written by E. Meyer, professor of psychiatry, contains most valuable hints how to evaluate manic depressions in pregnancy. Pernicious anemia demands immediate interruption of gestation. Osteosclerosis, on the other hand, furnishes no such indication, even though this ear disease is frequently made worse by pregnancy.

From the foregoing rather cursory survey it must appear that this work of Winter is a most valuable addition to our literature, and that, even without sharing in all points the extreme conservatism of its tenor, it is indispensable to the specialist as well as to the practitioner.

THE reviewer has devoted a considerable amount of space to this book not only because of its intrinsic worth but also because monographs of just this kind are perhaps the most eloquent arguments in favor of the vigor and vitality of our specialty—an assurance of which some timid souls seem to be in need at times. Unfortunately, the same unequivocal commendation can not be given to the monograph on the exact diagnosis of latent cancer by O. C. Gruner, of Leeds². The title, indeed,

¹ DIE INDIKATIONEN ZUR KUNSTLICHEN UNTERBRECHUNG DER SCHWANGERSCHAFT. By Prof. Dr. G. Winter und seinen Schuelern Prof. Sachs, Dr. Benthin, Dr. Sachs, Dr. Kunkel, Dr. Blomcke nebst einem Beitrag von Prof. Dr. E. Meyer. Berlin and Vienna Urban and Schwarzenberg, 1918

² THE EXACT DIAGNOSIS OF LATENT CANCER. By O. C. Gruner, M.D. Philadelphia: Blakiston's Son & Co., 1919

ANOTHER valuable English book that has appeared in its second edition, is that by Berkeley and Bonney¹. It intends to guide the practitioner through the intricacies of applying the knowledge gained in medical school, and we find that the authors have solved their task admirably well. The book is divided into five parts which deal, respectively, with the examination of the patient, the significance of symptoms, the interpretation of physical signs, treatment, and medicolegal

ing specifically to the instructions for conducting a bimanual examination, to the excellent illustrations of palpatory findings, to the very lucid differential diagnosis of fibroids, and to the splendid manner in which the significance of symptoms is brought home to the reader. We are so favorably impressed that we are willing to overlook certain liberties taken with Latin terms, as in the term *ovule Nabothi*.

Here and there we feel inclined to put a question mark after statements such as this, that the use of the vaginal speculum for examination is needed only by the beginner. In other places, more particularly in the therapeutic part, we would wish for a greater variety of methods. For the replacement of the retroflexed uterus, for instance, where they justly reject the sound, the authors rely on a very cumbersome digital reduction and seem to be unaware of the far more preferable method of Kuestner. In the palliative treatment of uterine cancer, douches are their first choice which to most of us would seem a rather thankless task. They admit the efficacy of acetone but ascribe much pain to its application; which, if the reviewer may be permitted to speak *pro domo*, proves that their technique is faulty.

And yet, with all these criticisms which may, perhaps, have an effect upon a later edition, this book is very good and will be most welcome alike to teachers and to practitioners.

¹A GUIDE TO GYNECOLOGY IN GENERAL PRACTICE. By CONNOR BERKELEY, M.A., M.D., M.C. (Cantab.), F.R.C.P. (Lond.), M.R.C.S. (Eng.), and VICTOR BONNEY, M.S., M.D., B.Sc. (Lond.), F.R.C.S. (Eng.), M.R.C.P. (Lond.) and London. Oxford University Press, 1910.

THE same authors have re-edited their *Textbook of Gynecological Surgery*², a companion piece to the foregoing work. The clearness of diction is the same that distinguishes the book reviewed above, and there is no fault to find with the printed description of operations which is preceded by a very good synopsis of the indications and followed by a thorough consideration of particular difficulties likely to be encountered, complications, after-care, etc. Yet, as a whole, the book is less satisfying. The chief reason is probably the quality of the illustrations. These, though numerous enough, are all small pen drawings and for the most part insufficient to serve their purpose. An experienced gynecologist might be enabled by their help to carry out the methods of the authors, but the book is more specially written for "those who are occasionally called upon to perform gynecological operations, and have not had opportunity for acquiring the ripe experience which long apprenticeship in the gynecological wards and operating theater brings." This inadequacy of the illustrations is, perhaps, most obvious in plastic work and it is even more evident in radical abdominal hysterectomy of cancer where one, by contrast, is reminded of the magnificent pictures of Kroenig and Doederlein, Sigwart, Hirst, Graves, and others. It may, however, be remarked in this connection that the final results of operation for uterine cancer are exceptionally good, and that the surgical accomplishments of the authors at no time can be questioned.

As the book is a record of the personal methods of the authors and reflects the practice of the school of gynecological surgery to which they belong, we must not take issue with, but merely mention, certain points of divergence from our own customs. To these belong the use of silk within the abdominal cavity, the repair of a third degree laceration with a single continuous suture the knots of which extend into the bowel, the failure of fastening the round ligaments to the stump of the vagina after hysterectomy, etc. Be that as it may, as a personal record, the work confers credit upon the Middlesex and Chelsea Hospitals whence it emanated.

By CONNOR BERKELEY, M.A., M.D., M.C. (Cantab.), F.R.C.P. (Lond.), M.R.C.S. (Eng.), and VICTOR BONNEY, M.S., M.D., B.Sc. (Lond.), F.R.C.S. (Eng.), M.R.C.P. (Lond.) and London. Oxford University Press, 1910.

AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY

No one could be more interested in the appearance of the *American Journal of Obstetrics and Gynecology* than the editor of *SURGERY, GYNECOLOGY AND OBSTETRICS*. It was with great regret that we saw the old *American Journal of Obstetrics* retire from the field and leave the obstetricians and the gynecologists of America without an exclusive journal.

Volume 1, Number 1, of the *American Journal of Obstetrics and Gynecology* with its strong edito-

rial board, its splendid appearance typographically, and its valuable scientific material, encourages one to believe that the old blue journal, that did so much for the development of the science of gynecology and obstetrics in America, has a worthy and permanent successor.

The obstetricians, the gynecologists, the general practitioners, the medical journalists of America, and the publishers of this important journal are to be congratulated in having at the

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AMERICAN COLLEGE OF SURGEONS

HOSPITAL STANDARDIZATION

THE chief purpose of the American College of Surgeons, since its beginning in 1913, has been the betterment of the clinical practice of surgery. Surgery is a specialty of medicine; it is also an inseparable part of the science of medicine. Better practice of surgery, therefore, means the better practice of medicine, and it was with this fundamental idea that the College set about its work. Even matters of public health, the prevention of disease, the intelligent distribution of the benefits of medicine, medical education, and problems of hospital administration and equipment, are factors in any comprehensive plan of action with such an aim. The work of the College in these fields is called hospital standardization.

Details of the program of hospital standardization, what it is, how it developed, its meaning to the public, to the hospitals, and to the profession, and a bibliography of the subject, are given in the report of the College for 1919 (Bulletin Vol. IV, No. 4). The following pages are a report of progress for 1920.

Hospital standardization aims to safeguard the patient against error in diagnosis, against lax or lazy treatment, against unnecessary surgical operations or operations by unskilled surgeons; it aims to bring to every patient, however humble, the highest service known to the profession.

Backed by the common experience of practice, doctors today unanimously agree that if they are to create the highest service of which the profession is capable, they must at regular intervals review what they have done, what results they have accomplished, what mistakes, if any, they have made and why. No avoidable mistake should be repeated. In other words, it is the doctor's obligation to benefit constantly by his experience and to apply to his work the ever increasing wisdom gained from that experience. Further, the doctor's duty to his profession, to himself, and to society, requires that he benefit also by the clinical experience of his colleagues. The common experience of his colleagues is his and his experience is theirs.

But how is the doctor to gain in a regular and orderly way the benefit of his own and his col-

leagues' clinical experience? To answer that question the minimum standard, given below, was designed.

The minimum standard grew gradually out of a thorough study of actual conditions in the practice of medicine. It grew out of the straight thinking of the clearest minds in medical and hospital work on this continent. It is practicable, workable, and constructive. It costs effort rather than money. It safeguards the care of every patient admitted to the hospital by insistence upon competence on the part of the doctor, on thorough study and diagnoses in writing for each case, and a checking up, at least once each month, of the clinical service of the hospital. It fixes responsibility throughout the hospital. It calls for the "production sheets" of the hospital, but does not cause in any way violation of the confidential relationship between the doctor and his patient. It encourages and even compels research. It defines the minimum service to the patient, which, beyond all debate, is considered essential.

Above all, the minimum standard is designed to bring a sense of responsibility to those who have to do with a hospital, that each patient admitted shall receive care scientifically sound. It is on this basis that the hospital may seek the confidence, good will, and support of its community.

The medical superintendent¹ of one of the leading hospitals of the continent recently said, after years of practical administration of the standard:

"The minimum standard is not, perhaps, so simple as it looks. But certainly it does not impose too great a burden of effort upon the doctor or upon the hospital. It calls for no undue expenditure of money. It is not impertinent, for it is based upon the sound principles of practice which the profession long ago accepted. It forces a constructive and co-operative scrutiny over all

before it.

"The minimum standard is not a theory. Wherever it is tried with sincerity, it succeeds.

¹Dr. M. T. McEachern, Vancouver General Hospital

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patients, these facilities to include at least chemical, bacteriological, serological, histological, radiographic, and fluoroscopic service in charge of trained technicians.

THE "APPROVED" LIST

Following herewith is a list of the general hospitals of one hundred or more beds in the United States and Canada which on inspection either met the minimum standard or later during the current year reported that they meet that standard.

In presenting this list the Regents of the College are quite aware that artificial standardization is undefensible. After five years of work, however, upon the problem of better service in hospitals, the Regents believe that the standard upon which this list is based is fundamental. They are borne out in this view by the hospital administrators and hospital trustees. The list, therefore, marks in an accurate fashion the progress of the medical profession in making its own ideals come true in practice.

The hospitals named in the list are taken from a group of 671 hospitals. Two years ago 89 out of

these 671 hospitals fulfilled the minimum standard; one year ago 198 out of the 671 met the standard; at the present time 392 of the group meet the standard.

These figures are the findings of personal visits to the hospitals by staff members of the College. These men, all graduates in medicine, visited the hospitals not as spies nor as meddlers. They went rather as engineers, discovering first what the

various hospitals by these visitors are a most important factor in the success of the entire work.

In addition to the 695 general hospitals of 100 or more beds in the United States and Canada, there are in these two countries 979 general hospitals of from 50 to 100 beds.

On every hand evidence exists today of a new and powerful interest on the part of the public in hospitals. The time is not far distant when a hospital, in co-operation with the doctors who practice in it, must either soundly protect the patients' right to be well or forfeit all claim to the confidence and good will of the community.

HOSPITALS WITH A CAPACITY OF 100 OR MORE BEDS IN WHICH THE MINIMUM STANDARD IS IN EFFECTIVE OPERATION

Those marked (*) were deficient in one or more details at the time of inspection but later reported complete fulfillment of Standard

UNITED STATES

ALABAMA

- Employees Hospital T C I. & R R Co., Birmingham
- *Hillman Hospital, Birmingham
- *South Highlands Infirmary, Birmingham

ARKANSAS

- *Logan H. Roots Memorial Hospital, Little Rock
- *St. Louis Southwestern Hospital, Texarkana
- *St. Vincent's Hospital, Little Rock

CALIFORNIA

*St. Mary's Hospital, San Francisco

- *St. Mary's Hospital, Los Angeles

COLORADO

- *City and County Hospital, Denver
- Minnequa Hospital, Pueblo
- *St. Anthony's Hospital, Denver

CONNECTICUT

- *Bridgeport Hospital, Bridgeport

- St. Francis Hospital, Hartford
- *St. Mary's Hospital, Waterbury
- Waterbury Hospital, Waterbury

DISTRICT OF COLUMBIA

- *St. Elizabeth's Hospital, Washington

GEORGIA

- *Grady Memorial Hospital, Atlanta
- *University Hospital, Augusta

IDAHO

- *St. Alphonsus Hospital, Boise

isco

MISSOURI

*Alexian Brothers Hospital, St. Louis

Research Hospital, Kansas City

*St. Anthony's Hospital, St. Louis

St. Louis City Hospital, St. Louis

*St. Luke's Hospital, St. Louis

St. Mary's Hospital, St. Louis

St. Mary's Hospital, Kansas City

*Wesley Hospital, Kansas City

MONTANA

*Columbus Hospital, Great Falls

Murray Hospital, Butte

*St. Patrick's Hospital, Missoula

NEBRASKA

St. Elizabeth's Hospital, Omaha

NEW JERSEY

*Alexian Brothers Hospital, Elizabeth

*All Souls Hospital, Morristown

*Bayonne Hospital and Dispensary, Bayonne

Christ Hospital, Jersey City

*Cooper Hospital, Camden

*Mountainside Hospital, Montclair

*Muhlenburg Hospital, Plainfield

Newark City Hospital, Newark

Newark Memorial Hospital, Newark

*Orange Memorial Hospital, Orange

Passaic General Hospital, Passaic

Paterson General Hospital, Paterson

St. Elizabeth's Hospital, Elizabeth

*St. Francis Hospital, Trenton

NEW YORK

*Albany Hospital, Albany

Bellevue Hospital, New York

Beth Israel Hospital, New York

*Binghamton City Hospital, Binghamton

Brooklyn Hospital, Brooklyn

*Buffalo City Hospital, Buffalo

*Buffalo Homeopathic Hospital, Buffalo

*Bushwick Hospital, Brooklyn

*Children's Hospital, Buffalo

Coney Island Hospital, Brooklyn

Cornell University Medical College, Ithaca

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Greenpoint Hospital, Brooklyn

Hahnemann Hospital of the City of New York, New York

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*St. Elizabeth's Hospital, Dayton

NORTH CAROLINA

*Watts Hospital, West Durham

NORTH DAKOTA

Bismarck Evangelical Hospital, Bismarck

St. John's Hospital, Fargo

OHIO

*Cincinnati Hospital, Cincinnati

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WYOMING

Wheatland Hospital, Wheatland

CANADA

ALBERTA

Calgary General Hospital, Calgary
Holy Cross General Hospital, Calgary

Holy Cross General Hospital, Calgary

BRITISH COLUMBIA

Provincial Royal Jubilee Hospital, Victoria
 *Royal Columbia Hospital, New Westminster
 St. Joseph's Hospital, Victoria
 St. Paul's Hospital, Vancouver
 Vancouver General Hospital, Vancouver

*Royal Columbia Hospital, New Westminster

St. Joseph's Hospital, Victoria

St. Paul's Hospital, Vancouver

Vancouver General Hospital, Vancouver

MANITOBA

Children's Hospital, Winnipeg
St. Boniface Hospital, St. Boniface
Winnipeg General Hospital, Winnipeg

St. Boniface Hospital, St. Boniface

Winnipeg General Hospital, Winnipeg

NOVA SCOTIA

Victoria General Hospital, Halifax

ONTARIO

Hospital for Sick Children, Toronto
Kingston General Hospital, Kingston
*St. Michael's Hospital, Toronto

Kingston General Hospital, Kingston

*St. Michael's Hospital, Toronto

QUÉBEC

Children's Museum 1000 1000 1000 1000

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It is a good idea to

SASKATCHEWAN

*Grey Nuns' Hospital, Saskatoon
Regina General Hospital, Regina

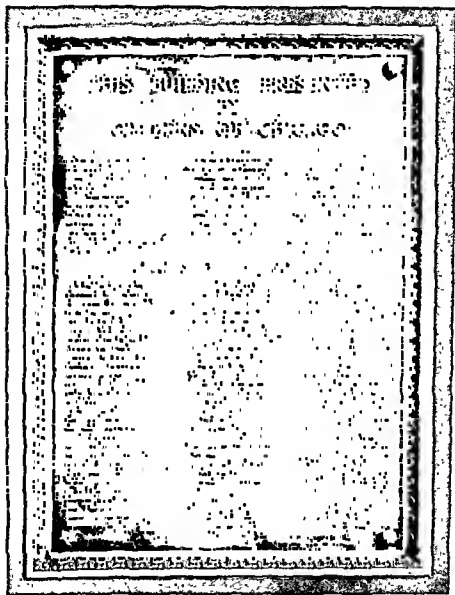
Regina General Hospital, Regina

THE NEW HOME OF THE COLLEGE

ON May 1, 1920, the administrative offices of the American College of Surgeons were transferred to the permanent location at 40 East Erie Street, Chicago.

solute gift, becomes a valuable asset, and its central location in the heart of Chicago makes it an ideal permanent home for the institution.

On this page appears a reproduction of the



The new home of the College, which is a commodious and handsome structure, with adjoining land suitable for future extension, was purchased and presented to the College by public-spirited lay citizens of Chicago and a group of Fellows of the College residing in that city. The home, besides furnishing an adequate business office for the College, will provide a dignified and suitable meeting place for local and visiting surgeons. This property, coming to the College as an ab-

bronze tablet which adorns the building and on which is recorded the names of those who contributed to its purchase. This property is within a few blocks of the center of the business loop of Chicago, and in a location that is not only ideal for the home of our institution, but one in which the land value will rapidly increase.

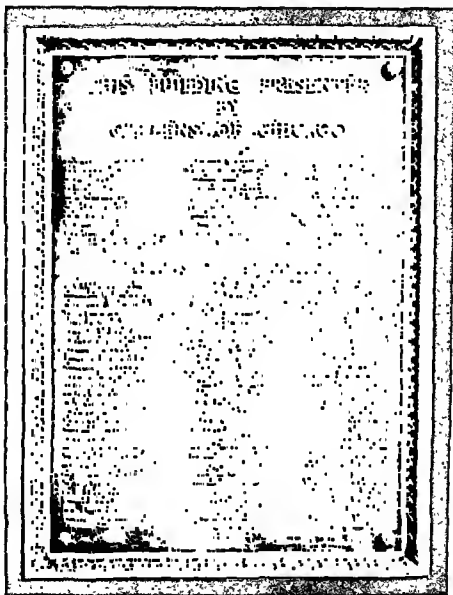
The Fellows of the College are invited to inspect the new home and to make it their headquarters when visiting Chicago.

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An International Magazine
Published Monthly

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1920

as a splint. The successful closure of a colostomy sometimes requires suturing sufficient to constrict the lumen beyond the limit of safety. The tube prevents further contraction and conveys gases and faecal matter beyond the line of closure. It may prove of value also in disturbances of the gastrointestinal tract resulting from malfunction of the neuromuscular mechanism (tonic spasm, atony due to sympathetic irritation, and irregular contractions due to parasympathetic irritation). An important

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a formidable operation unnecessary

distention and obstruction in both by an ileocolic anastomosis (ileum to ascending colon) combined with a cæcostomy. Balfour has found that in some of these cases a colostomy may be avoided by introducing a tube through the rectum beyond the point of spasm of the rectosigmoid. He suggests that in certain cases of paresis the anastomosis of the ileum and colon, rather than an enterostomy, should be given more consideration than in the past.

The rubber tube has proved a most important factor of safety and has brought about satisfactory results in the serious and difficult operations in which it has been employed at the Mayo Clinic

J. F. McDONALD.

Taddei, D.: The Technique of Drainage in Suppurations (La tecnica del drenaggio nelle suppurazioni) *Riforma med.*, 1920, xxxvi, 447

Taddei states that aseptic drainage after ample incision of the tissues is still the best means of overcoming local suppuration but that the majority of practitioners, other than surgeons, do not know

books, and general ignorance regarding modern surgical physiopathology. The information in text-

of the technique of drainage in the treatment of common local suppurative infections. Tubular drainage, he believes, should be used only when a suppurating cavity is to be drained, when it is impossible to make a large opening, or when the drain cannot be safely inserted at the lowest point. The use of a tube drain, unless there is some anatomical reason for it, is an error.

The introduction of gauze into a suppurating cavity insufficiently opened is a blind and dangerous procedure. The best method of determining how and where gauze should be inserted is to introduce a gloved finger.

Taddei emphasizes the necessity for the radical treatment of any local suppurative process which persists in spite of conservative treatment as such a suppuration is a grave menace to the body.

WILLIAM A. BRENNAN.

Taylor, R. T.: An Effort to Standardize Surgical Mensuration. *N. York M. J.*, 1920, cxii, 109

It is advisable that any device adopted for recording motion should be applicable to all joints. In addition it should be simple in construction, inexpensive, and easy to use, so that the variations between the readings made by different persons will be slight.

Four comparative records are required in involved and uninvolved extremities and joints on the two sides, viz (1) the length of the extremities; (2) the circumference of the extremities; (3) the motion of each joint; and (4) the position of the angle of malposition in ankylosis or partial ankylosis on the spine. In addition, the extent of deviations in an anteroposterior or lateral direction, the limitation

how the simple graduated semicircle and protractors for measuring joint motions are used

The apparatus required consists of: (1) a table; (2) a graduated semicircle and protractor; (3) a cotton spring tape measure, (4) a lead tape measure; (5) a rectangular drawing triangle; and (6) a yard stick.

(6) the malleoli; (7) the acromion processes; (8) the olecranon processes; (9) the styloid processes of the ulnæ; (10) the vertebra prominens; (11) the posterior superior spines; (12) the ischial tuberosities; (13) the greater trochanters, and (14) the gluteal notch

CARL R. STEINKE.

Vogeler, K.: Intracardial Injection (Die intrakardiale Injektion). *Deutsche med. Wchnschr.*, 1920, xlv, 745

The author reports the case of a 14-year-old patient who, during a laparotomy for obstructive ileus due to postoperative adhesions, went into complete collapse. By means of the intracardial injection of 1 ccm. of adrenalin Vogeler was able twice, although each time only for a short period, to restart the heart action and respiration and cause a return of consciousness.

Intracardial injections of adrenalin have been given frequently, but usually the results have been

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CASES OF PULMONARY THROMBOSIS

Case	Sex	Age	Diagnosis	Operation	Days following operation	Predisposing Cause of Embolism
1	M	42	Osteochondroma of left ileum	Excision of osteochondroma	4	Phlebitis
2	M	46	Gastric ulcer, cholecystitis, chronic appendicitis	Posterior gastro-enterostomy, cholecystectomy; appendectomy	6	Perforated ulcer with pre-operative loss of weight
3	F	33	Cholecystitis, retroversion, rectocele	Cholecystectomy, perineorrhaphy	2	
4	F	44	Carcinoma of rectum	Colostomy	3	
5	M	65	Hypertrophied prostate	Suprapubic prostatectomy	15	Cachexia; phlebitis of left leg
6	F	33	Gestation, third degree laceration of perineum	Parturition, perineorrhaphy	14	Perineal sepsis
7	F	51 rec	Cholelithiasis, carcinoma of rectum	Cholecystostomy, panhysterectomy	7	Anæmia; cachexia
8	F	43	Floating kidney, cholecystitis, appendicitis	Nephropexy, cholecystostomy, appendectomy	12	Pre-operative loss of weight 55 lb

During this period 7 deaths occurred from pulmonary thrombosis in a series of 16,966 operations or 1 death in 2,385 cases (0.042 per cent). There were 5,275 abdominal sections in the series, with 5 deaths or 1 death in 1,055 cases (less than 0.1 per cent). Among 528 hysterectomies there was 1 death (less than 0.5 per cent). There was also 1 death following childbirth, a case in which an extensive perineal laceration was repaired immediately after delivery. As during the same period there were

The authors call attention to the fact that during the same period thrombosis did not occur in the cases of 76 patients suffering from extreme anæmia and cachexia who had the spleen, gall-bladder, and appendix removed. In all of these cases, however, the patient was subjected to one or more transfusions of whole blood before the operation was undertaken.

ANÆSTHESIA

Berry, M.D., and others: Discussion on Anæsthesia in Operations on the Thyroid Gland. *Proc. Roy Soc Med*, Lond., 1920, xiii, Sect. Anæst., 45.

Berry's experience is based upon nearly 700 thyroidectomies. In the first 60 cases chloroform only was employed. In the next 260 cases the anæsthesia was induced with chloroform, or chloroform-ether, but ether by the open method was used during the rest of the administration. There was one death on the table. This was due to heart failure and occurred shortly after a change had been made from chloroform to ether. The condition was reported postmortem as status lymphaticus. Ether by the open method was employed in the last 260 cases.

In all cases, but especially in those which were very severe, the narcosis was kept very light. A preliminary dose of $\frac{1}{100}$ gr. of atropine was given. The author seldom uses morphine.

Certain stages of the operation require special care on the part of the anæsthetist. The dislocation of the tumor is a dangerous step in cases of severe dyspnoea, many instances of death at this period having been recorded. It is therefore important that the anæsthesia should be especially light at this time. When the goiter is being dissected out there is often considerable pulling on the trachea. The resulting interference with respiration will be decreased if the surgeon allows free breathing at intervals.

There are two classes of cases in which there is special danger, those with marked tracheal obstruction and those with cardiac trouble. It was taught

concerning these cases

In the opinion of the authors it is probable that most of these deaths could have been prevented.

In Case 1, a ligation of the femoral vein above the location of the phlebitis might have prevented the loosening of the embolus.

In Case 2, preliminary transfusion of whole blood and a two-stage operation — gastro-enterostomy in the first stage, cholecystectomy and appendectomy in the second — might have prevented the formation of the thrombus.

In Case 3, it is probable that the veins in the rectoperineal septum were unnecessarily traumatized.

In Case 4, the veins in the mesentery of the sigmoid probably were traumatized unnecessarily.

In Case 5, it is doubtful whether any precautions were possible beyond those which were taken as it is probable that the primary thrombosis occurred in the veins in the space between the neck of the bladder and the pubic bone and extended to the femoral vein from which the embolus was carried to the pulmonary vein.

In Case 6, it is probable that the trauma was caused during the delivery of the child.

In Case 7, a preliminary transfusion of whole blood might have prevented the occurrence of the embolism.

In Case 8, a two stage operation — cholecystectomy and appendectomy in the first stage and nephropexy in the second — might have prevented the occurrence of thrombosis.

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in this way the anaesthesia may be maintained without disturbing the operative field, the method has all the advantages of open anaesthesia and the narcosis may be controlled without any considerable movement of the patient.

6 Anaesthesia induced by intratracheal insufflation is suitable for operations on the thorax in which a high pressure is needed, and for operations on the cerebellum in close proximity to the respiratory center in which it may be necessary to maintain respiration artificially because of respiratory syncope.

7 The induction of anaesthesia with a 5 per cent ether solution given by rectum is of value when combined with local anaesthesia for operations on the face and neck.

8 A preliminary dose of morphine and atropine should be given regularly in all cases before the induction of general anaesthesia.

WILLIAM R. MEERER.

Hepburn, W. G.: Stovaine Spinal Anaesthesia
Am J Surg, 1920, xxiv, Anes. Supp., 87

Stovaine spinal analgesia has been used in the Montreal General Hospital since 1908 with uniformly satisfactory results.

The properties of stovaine as shown by experiments are: (1) an analgesic action equal to that of cocaine, but without concurrent vasoconstriction, (2) a cardiotonic action, and (3) a bactericidal action.

The solution used in the Montreal General Hospital is prepared in the hospital and put up in 2-ccm. glass ampoules. It consists of 5 gm. of stovaine and 5 gm. of commercial glucose in 95 ccm. of physiological saline solution. It has a specific gravity of 1.031 and a neutral reaction.

The dosage is regulated according to the patient's weight, age, and vitality. The maximum dose is 0.7 gm., or 1.24 ccm. of the solution, while the minimum dose is .01 gm.

If the operation to be performed requires the anaesthetization of only the sacral roots of the cord, as is the case in operations for hemorrhoids, fissure in ano, ischiorectal abscess, etc., the injection is made with the patient in the sitting position.

If the lumbar or lower dorsal nerves must be controlled for an abdominal operation or an operation on the lower extremities, the patient lies first in a right lateral position with the head and shoulders raised, if the operation is to be performed on the right side, and in a left lateral position if it is to be performed on the left side. The injection having been made in this position, he is immediately turned on his back and his hips are elevated by means of a bar on the table. The elevation of the hips and shoulders causes the dorsolumbar area to be most dependent. The convexity of the back is altered by raising or lowering the hips. After one minute has elapsed, sensation is tested by means of a sharp needle and the solution is allowed to flow upward to the limit required.

For operations below the level of the umbilicus analgesia is checked when the xiphoid sternum is reached by quickly lowering the hips to the level of the table.

If an abdominal operation is to be performed above this level, the analgesia must be allowed to ascend to the level of the fourth intercostal space anteriorly.

It is most important that the elevation of the head and shoulders should be maintained continuously from the time of the injection until six hours after the operation.

Care must be taken that the head and shoulders are never so low that the stovaine will gravitate upward beyond the dorsal cord as in such case it would produce complete intercostal paralysis and diaphragmatic breathing of diminished rate and depth.

This method of inducing anaesthesia has been

to two hours, stovaine has been detected in the spinal fluid twenty-four hours after the injection, and traces of it have been found in the urine after seventy-four hours.

Experiments reviewed by the author suggest an explanation for the depressive action of ether on the blood pressure in shock. It seems probable that even in the normal animal the immediate effect of ether is a depression of the heart. This accounts for the primary fall in blood pressure, but the decreased heart output is soon compensated for by a reflex peripheral constriction and possibly by a distinct stimulation of the vasoconstrictor center by the ether. The pressure thus returns to the normal level where it remains if the etherization is not carried to an extreme degree. A similar depression of the heart occurs in shock but the normal vasomotor reactions are impaired and as the compensatory constriction fails to take place a continued fall in blood pressure results.

There is some evidence that the low blood pressure associated with shock causes a depression of the vasomotor center so that it no longer reacts normally to a fall in pressure. Secondly, there is the possibility that in this condition of ether sensitivity a maximum contraction of the arterioles is already present which prevents the peripheral circulation from compensating for the lessened output of the heart. The increase in the depressive effect of ether immediately after a severe hemorrhage must be explained on the latter assumption, and possibly also that occurring in the early stages of shock. This theory is supported by a series of experiments recently completed on the perfusion time of normal saline through the vessels of the hind legs of animals during the development of shock. A gradual decrease in the perfusion rate indicated an increased constriction of the peripheral vessels.

ISABELLA C. HERR.

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SURGERY OF THE HEAD AND NECK

HEAD

Pujol, J. T.: *Perforating Tumors of the Cranium*
(*Tumores perforantes del cráneo*) *Rev. españ. de ciruj.*, 1920, II, 65

Perforating tumors of the cranium are usually sarcomatous in nature and may arise either from the bone itself or the dura mater. On examination

physical examination and when extirpation of a supposed cyst is attempted a severe hemorrhage results. An X-ray examination is therefore of great value.

Perforating tumors of the cranium are usually soft and in some cases may be reduced within the cranial cavity. The increase in size takes place also within the cranial cavity and thus increases the intracranial pressure. The blood supply is very rich, often presenting a cavernous aspect.

When a tumor arising from the dura mater reaches considerable size without perforating the cranium, the bone symptoms of local or general cerebral compression are produced. In the author's cases there were no symptoms of increased intracranial pressure, the perforation of the cranium acting as a decompressive trephining. The usual physical signs are the presence of a soft tumor surrounded by a hard bony border which is elevated or possesses spines which extend within the tumor. The tumor may be reducible but upon reduction symptoms of cerebral compression are produced. A palpable pulsation is sometimes present and there is usually a palpable increase of pressure on strong coughing. Radiographic examination of the skull will reveal the bony defect. It is generally believed that these tumors are of rapid course, but the author's experience has been to the contrary.

The surgical treatment may be relatively easy when the tumor is localized, not adherent to the brain, and easily accessible, and the dura mater is intact and resistant to perforation. In one of the author's cases the tumor had undermined the dura and involved the sinus rectus so that extirpation was impossible. The orbit also may be invaded by such tumors.

The usual surgical procedure is extirpation of the tumor mass entire, including the bone and dura a short distance from the neoplasm. In certain cases the skin and scalp tissues also must be removed, although as a rule the tumor is limited by the scalp tissues so that the skin at least may be preserved. In cases in which the skin has been preserved no recurrence of the tumor at this level has been noted. Bone and dura mater cannot be readily included together in the extirpation because of the difficulty of securing hemostasis in the dura. The tumor

usually includes both dura and bone, however, and it is not possible to separate these at the site of the neoplasm. The author usually cuts the cranium well out from the tumor, leaving a narrow zone of

the edge of the bone.

The details of four cases are given and the author's technique is minutely described. The article contains many photographs of cases before and after operation and X-ray plates of the skulls.

WILLIAM R. MEENER.

Kro - - - - -

The presence of blood in the spinal fluid indicates

be borne in mind, however, that the pressure of the spinal fluid may be increased also by such factors as

of serious traumatic meningitis, i.e., increased intracranial pressure and increased albumin content. Group 2 included 29 cases in which the pressure of the spinal fluid was increased and the fluid contained blood but there was no fracture. In Group 3 were 28 cases with symptoms of increased pressure, bloody fluid, and an open skull fracture. In Group 4 were 3 cases in which the spinal fluid and operative findings were negative.

It is evident that increased blood pressure does

lation, torsion, compression) causes a prompt increase in the pressure of the spinal fluid. On the other hand, compression of the carotids causes the

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cleared up, however, so that three weeks after the operation he was able to talk fairly well, had a fairly good grip in his hand, and was able to be up and around. Microscopic examination of the growth showed it to be an endothelial tumor

GEORGE W. HOCURET.

Kanavel, A. B.: Tumors of the Face. *Surg Clin. Chicago*, 1920, IV, 731

Kanavel gives the histories of three patients with tumors of the face and discusses the embryology and pathology of facial tumors

Dermoid tumors are very common in the face. Epithelial tissue is frequently "turned in" to result at a later period in the development of a tumor, especially in the line of fusion.

Certain tumors of the face, such as hamaoma and lymphangoma, which occasionally occur about the angle of the mouth and upon the lips, are due to over-development of tissue normally present

Of the tumors of the jaw which appear as a result of abnormal development of the foetus the most common is the odontoma. Epithelial odontoma, adamantinoma, and adenocarcinoma appear in

which in some cases may extend from the angle to the symphysis

Of the tumors which have no definite relation to embryological development the most common is sarcoma of the jaw. Those developing from the bone-marrow are usually benign giant-celled tumors. The malignant round-celled or spindle-celled variety occurs less frequently. Mixed tumors, fibrosarcoma, chondrosarcoma, osteochondrosarcoma, and lymphangiosarcoma, are not uncommon

If a tumor develops from the bone, involvement of the nerve resulting in severe pain is not uncommon and this is an important symptom.

There is no site of predilection for sarcoma or carcinoma. Growths involving the antrum are more apt to be sarcomatous than carcinomatous

A somewhat different type of tumor is a growth which rather commonly involves the salivary glands, particularly the parotid and submaxillary glands. This type belongs to a class known as mixed or complex tumors, new growths containing a considerable variety of tissues such as cartilage, myxomatous tissue, fat, and lymphoid structures generally considered of mesoblastic origin and, in addition, cells resembling epithelial, endothelial, or connective-tissue cells from which they are known as epithelial, endothelial, or sarcomatous growths.

In operations upon these cases the resection should extend beyond the limits of the tumor. In

other words, if the tumor has grown down to the bone it is wise to remove a section of the bone, and, in aggravated cases, the entire involved maxilla in order to go well beyond all of the tumor growth. When possible the upper table of the superior maxilla should be preserved to prevent prolapse of the eye.

The mortality following operations for facial tumors is

bility of removing the growth.

HOWARD A. MCKNIGHT

Cushing, H.: The Role of Deep Alcohol Injections in the Treatment of Trigeminal Neuralgia. *J. Am. M. Ass.*, 1920, LXV, 441.

From 1847 to 1907 various substances were injected to control neuralgia. In 1907 a number of articles appeared upon the use of alcohol in the

From a large number of cases the author draws the following conclusions:

Deep extracranial injections of alcohol into the maxillary and mandibular nerve trunks near their foramina of exit have completely superseded peripheral neurectomies. In neuralgias limited to one of the two lower divisions, alcohol injections represent the treatment of choice. When the neuralgia has spread beyond the original area and involves that supplied by the adjacent division, a trigeminal neurectomy must be considered. Since the results obtained by a trigeminal sensory root avulsion are perfect and permanent, the prolonged and repeated use of injections in refractory cases which involve more than one division is to be deplored.

ISAIDORE E. HENKOW.

Cushing, H.: The Major Trigeminal Neuralgias and Their Surgical Treatment Based on Experiences with 332 Gasserian Operations. I. The Varieties of Facial Neuralgia. *Am. J. M. Sc.*, 1920, CLV, 157.

Cushing describes at length the five types of facial neuralgia which may be mistaken for trigeminal neuralgia: those ascribed to the sphenopalatine ganglion, those secondary to zoster, those attributed to the geniculate ganglion, those occurring in certain cases of convulsive tic, and, lastly, those due to the involvement of the trigeminus by tumors. Minor

International Abstract of Surgery

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DeGastano, L.: Congenital Cysts of the Neck (*Sulle cisti congenite del collo*) *Riforma med.*, 1920, xxxvi, 401

Two cases of cysts of the neck treated surgically are reported. The patients were women 20 and 21 years of age respectively.

The author states that the clinical classification of congenital cysts of the neck into dermoid and amygdaloid cysts is not correct. He suggests the following anatomico-clinical classification: (1) suprahyoid cysts, those which arise in the space between the hyoid bone and the floor of the mouth; (2) thyrohyoid cysts, those arising between the thyroid and the hyoid bone, and (3) subthyroid or suprasternal cysts, those which arise in the space between the thyroid and the sternum. By a sub-classification they may then be grouped as median or lateral cysts.

The anatomohistologic classification of such cysts comprises

1. Ectodermic cysts, those arising from pavement epithelium with corneal layers and cutaneous formations.

2. Endodermic cysts: (a) with cylindrical epithelium and showing embryonic characteristics; and (b) with pavement epithelium and showing evolutionary changes.

Cysts arising in the median line of the thyroglossal duct may be divided into: (1) cysts with cylindrical epithelium showing embryonic characteristics, and (2) cysts with thyroid tissue showing evolutionary changes.

In the two cases reported by the author the cysts were diagnosed clinically as median, subthyroid or suprasternal congenital cysts. The histologic examination showed the first to be an ectodermic cyst and the second a cyst and fistula originating

Rehn divides the carotid artery into three parts: the first extending from its beginning up to its division into the internal and external branches, the second consisting of the point of division itself; and the third extending from the beginning of the internal carotid to its entrance into the skull where a branch is given off to the digastric muscle. The suture he employs is that used by Carrel. The

incision in the neck, a cross section under the jaw anterior to the angle of the jaw, exposure of the parotid and temporary oblique division of the lower jaw. The superficial temporal, the occipital, the posterior auricular, and when necessary, the external carotid are divided and double ligated high up. The styloid process is freed and with it the insertion of the styloglossus and stylo-pharyngeus muscles is drawn forward. When necessary, the proximal

Klose, H.: The Acute Inflammations of the Thyroid; Their Etiology, Course, and Surgical Treatment (*Die akuten Entzündungen des Kropfes; Aetologie, Verlauf und chirurgische Behandlung*) *Berl. klin. Wchnschr.*, 1920, lvi, 202.

This article is based on a large number of cases of inflammation of the thyroid gland due to local infection or the presence of suppurating foci elsewhere in the body which were observed during the war. Klose points out that formerly thyroiditis and strumitis were differentiated. He agrees with Kocher, who never saw a case of pure thyroiditis, that an acute infection attacks only glands which have undergone pathologic change or are predisposed to infection.

Weise, H.: Gunshot Injuries of the Common and Internal Carotid Arteries and Their First Treatment (*Ueber die Schussverletzungen der Arteria carotis communis, der Carotis interna, und ihre primäre Behandlung*) *Beitr. z. klin. Chir.*, 1920 cxix, 160

The anatomical and clinical picture of gunshot wounds of the common carotid is described. The author discusses 15 cases from the recent literature in which aneurisms of the common or internal carotid developed weeks or months after the injury. Death or severe brain disturbances resulted in 53.33 per cent; recovery in 46.67 per cent. Secondary suture in cases of aneurism of the injured common carotid resulted in recovery in 92.86 per cent. Of fifteen instances in which the injured carotid was primarily ligated, recovery resulted in 33 1/3 per cent. A cure was obtained also in 2 cases treated by Rehn with primary suture.

eration due to atherosclerosis of the capsular vessels. In this condition the bacteria find a suitable soil for development and may remain dormant or become active at any time.

Klose differentiates between goiters of mountainous regions and those of the lowlands. On account of the size of the nodules and degenerations, the former are especially susceptible to infection. The infection enters almost exclusively by the hæmatogenous route.

The acute infections are due to pneumococci,

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make possible a fairly accurate differential diagnosis between true hyperthyroidism and simple neurasthenia and therefore should be made routinely. As a general rule, severe cases have a basal metabolism running from 66+ upward, while that of moderately severe cases varies from 45+ to 65+ and that of mild cases is below 45. Every patient should be kept under observation for at least a week, preferably two weeks. For practical purposes an elaborate classification of the toxic cases is not essential. Rest is helpful in the preparation of patients for operation but will reduce the basal metabolic rate only from 10 to 15 per cent.

In the extremely toxic cases X-ray therapy is prescribed, but the results have not been altogether satisfactory. Such treatment should be employed chiefly in cases in which there is some suspicion of

mildly toxic cases of adolescence in which not less thyroid tissue but more iodine is needed, (3)

tion should be done when there is the least doubt as to the propriety of resection. Frazier prefers single ligation to double ligation done at one- or two-week intervals. As a rule he ligates first when

should follow in two or three months, at which time the maximum improvement is noted.

The ultimate and total result of surgical interference follows the resection of the gland. The author performs the resection under nitrous oxide anesthesia with "anoci" technique. Local anesthesia is contra-indicated. The measure of success in the surgical treatment of hyperthyroidism varies directly with the amount of tissue removed.

Of the patients heard from before the war, 80 per cent had recovered, either altogether or sufficiently to enable them to resume their occupations.

CARL R. STEINKE.

Judd, E. S.: The Results of Operations for Adenoma with Hyperthyroidism and Exophthalmic Goiter. *Ann Surg.* 1920, LVII, 145

The two types of goiters with hyperthyroidism which produce definite clinical syndromes are exophthalmic goiter, in which the symptoms are characteristic, and adenoma with hyperthyroidism. A third type which is frequently confused with the other two consists of the mildly toxic adolescent goiters which are usually temporary or respond to treatment

This study covers a group of 100 consecutive

since the operations performed in the first group seem sufficient to demonstrate the success or failure of the surgical procedures. The group of cases of adenoma with hyperthyroidism were chosen from 1917 and 1918 because a study of the metabolic rates had been made in all instances; the average

thyroidism.

Grife, G. W.: Toxic Adenoma in Relation to Exophthalmic Goiter. *Ann Surg.* 1920, LVII, 147.

Clinical evidence of the functional activity of adenomata is found in the frequent development of symptoms identical with those which are characteristic of exophthalmic goiter and in the disappearance of these symptoms after the removal of the adenoma. In hyperthyroidism due to hyperactive adenomata, either iodine or thyroid extract may cause an aggravation of the symptoms. With the exception of exophthalmos, all the characteristic symptoms of true exophthalmic goiter may be present in cases of "toxic adenoma."

If in a case of true exophthalmic goiter the gland is not hyperplastic, but an adenoma is present, the removal of the adenoma relieves the patient in precisely the same way and to the same degree as the

tion to adrenalin are not increased, but myocarditis, a high blood-pressure, or neurasthenia is present.

It would seem, therefore, that the various types of goiter should be regarded as varying degrees of the same or similar processes and that, certainly as far as treatment is concerned, no differentiation should be made between exophthalmic goiter with

author's

5 2,477

6 cases

of exophthalmic goiter.

CARL R. STEINKE

Alkins, W. H. B.: Radium in Toxic Goiter—Ist Treatment. *Med Press*, 1920, N. S. CV, 25.

This article records the author's experience with 100 cases of toxic goiter. Alkins agrees with Knox that radiation should be supplemented by: (1) rest in bed, (2) dietetic treatment, and (3) treatment with drugs.

The best results are obtained with the deeply penetrating rays. The radium is so screened that the short rays are cut off. In this way the superficial

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died from other diseases. These results, Meyer believes, prove that the radical operation may be curative

Involvement of the supraclavicular glands is not a contra-indication to operation. In Meyer's opinion it is the surgeon's duty to operate when such involvement is present.

The radical operation as done by Meyer is begun in the axilla and continued toward the sternum. The lymph nodes and axillary fat are removed before the cancerous breast itself is handled.

HENRY J. VANDEN BERG

TRACHEA AND LUNGS

Jean, G.: Glandular Abscess (Adenophlegmon) of the Pulmonary Hilum. *Med. Press*, 1920, n. 2, cx, 88.

Glandular abscess of the pulmonary hilum begins as a lesion affecting the afferent lymphatics, a pulmonary or pleural focus of infection which usually contains pneumococci. The examination of the glands of the hilum of patients who have died of the pulmonary form of influenza invariably shows that these glands have undergone enlargement and not infrequently are filled with pus.

In the initial stages the symptoms, which consist of dyspnea, a dry convulsive cough, and pain in chest, are usually vague. The pain is often localized in the infrascapular fossa toward the inferior angle of the scapula. If the abscess is posterior, percussion may reveal a little partial dullness in the omovertebral space between the fifth and eighth ribs. Vocal resonance is not perceptibly modified. On auscultation the signs predominate in the infrascapular fossa and the corresponding omovertebral space. A distant bronchial souffle due to pressure on the bronchus may be heard. At the base subcrepitant râles are noted almost invariably. These are probably caused by blood stasis following compression of the pulmonary veins. Another very constant symptom is bronchophony in the omovertebral space below the fifth rib with normal resonance above and below this area.

The course of the condition is necessarily associated with considerable constitutional disturbance, wide variations in temperature, and polynucleosis. All of these symptoms remain rather vague until the

coughing or dyspnea the patient evacuates by

reveals a well-defined cavity. Recovery follows in the course of a few weeks.

Radioscopy is important in establishing the diagnosis. The condition must be differentiated

PHARYNX AND OESOPHAGUS

Thomas, C. C.: The Roentgen Examination of the Oesophagus. *J. Am. Inst. Homœop.*, 1920, xii, 107.

The author gives a brief description of the anatomical and physiological peculiarities of the oesophagus as revealed by the roentgen ray. In making the examination he uses the buttermilk-barium meal when there is considerable stenosis, but otherwise a mixture of barium and acacia. Pieces of

examination of the stomach inasmuch as gastric pathology may have an etiological relationship to the oesophageal findings.

The principal intrinsic causes of changes in outline are diverticula, neoplasms, benign strictures, cardiospasm, and inflammatory conditions. Reflex spasms or the presence of particles of food are other factors which must be taken into consideration in the diagnosis. The former may be obviated in part by the administration of belladonna or atropin. The roentgenographic characteristics of typical

and found at the upper end of the oesophagus,

sumed to be due to syphilis of the stomach, and in the other, to carcinoma of the stomach.

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GASTRO-INTESTINAL TRACT

Bircher, E: Resection of Branches of the Vagus Nerve in the Treatment of Gastric Affections (Die Resektion von Aesten des N. Vagus zur Behandlung gastrischer Affektionen). *Schweiz. med. Wchschr.*, 1920, 1, 519

According to the investigations of Eppinger, Hess, Bergmann, and Westphal, the nervous element in the etiology of gastric ulcer is of great importance. This has been proved by numerous cases in which the classic symptoms of ulcer are presented but an ulcer is not found at operation. It has been demonstrated also by cases in which the development of the ulcer was preceded for some time by gastro-nervous symptoms.

On the basis of experiments and clinical observations the author has come to the conclusion that all cases in which the operative findings do not agree with the clinical phenomena the condition is due to increased tonicity of the vagus nerve. He therefore attempts to lower the excitability of this nerve by resecting the anterior and posterior branches supplying the stomach. Three or four branches of this nerve run along the anterior wall of the stomach at the upper border of the lesser curvature. Bircher isolates and tears them out or double ligates the entire neurovascular plexus at the lesser curvature and then severs it, excising a small portion.

To remove the nerve fibers from the posterior surface of the stomach it is necessary to go through the great omentum between the stomach and the colon.

In the beginning the author chose for the treatment described only cases in which ulcer was not found at operation. Later he applied it also to cases of so-called "gastric neurosis."

The operation is followed by the cessation of the pain, nausea, and vomiting, improvement in the secretory condition, and the return of the normal gastric tone, shape, and position. In Bircher's opinion it will influence the hyperacidity and hypersecretion in ulcer cases as well as a gastro-enterostomy, and the spastic condition better than a gastro-enterostomy. It is indicated especially for cases in which the ulcer syndrome is presented but an ulcer is not found at operation. Callous ulcers are treated best by resection of the stomach.

Carr (Z).

Rosenthal, E: The Symptoms and Treatment of Gastric and Duodenal Ulcer (Ueber die Symptomatologie und Therapie der Magen- und Duodenalgeschwüre). Berlin S. Karger, 1920

The author reports his study of 326 cases of ulcer seen during three and one-half years among 3,500 cases of gastric conditions (93 per cent). The findings of this study are reviewed thoroughly and recorded in 28 tables. Nine plates and numerous X-ray pictures illustrate the clinical findings and the results of treatment.

The author's conclusions regarding the treatment, which are at variance with generally accepted theories, are as follows:

1. The great majority of cases may be cured by appropriate internal therapy or so much improved that the patients are able to perform their daily duties. Ulcers therefore should be treated medically as cases operated upon remain cured only if a dietary regime is followed faithfully after operation as well as before. This statement does not apply, however, to cases of ulcer in which an organic stenosis has been formed.

2. Hyperacidity and hypersecretion, the principal factors favoring ulcer, are treated more effectually by internal therapy than by gastro-enterostomy. Medical treatment is indicated also for penetrating and calloused ulcers of the lesser curvature as the surgical procedure is associated with a relatively high mortality and does not prevent recurrence. A cure or improvement obtained by medical means is usually associated with the partial or complete disappearance of the ulcer or ulcer folds.

While this monograph deals with gastric and duodenal ulcer purely from the medical standpoint it is of interest also to the surgeon. Kolmoss (Z).

Duval, P: New Points in the Treatment of Ulcer of the Lesser Curvature (Nouveaux points de vue de la Behandlung des Geschwüres der kleinen Kurvature). *Plus-Ultra*, 1920, III, 5

Ulcers of the lesser curvature merit special attention, next to ulcers of the pylorus because of their frequency, their special clinical symptoms, their complications (hæmorrhage, subphrenic abscess), and their characteristics in the roentgen picture. They require also special surgical treatment. Operation must be directed not only against the local development of the ulcer, but also against spasm and hypersecretion. Surgical procedures are of two kinds, direct (excision and resection) and indirect (gastro-enterostomy).

Gastro-enterostomy, while an indirect method, affects the spasm and hypersecretion directly by emptying the stomach. The direct methods are (1) Balfour's operation, the destruction of the ulcer by cauterization from without inward; (2) a wedge-shaped excision, the removal of a large portion of the stomach, or transverse resection; and (3) Roth's method in which the stomach above the pylorus is folded off in two directions to wall off the ulcer and a gastro-enterostomy is performed.

Cauterization and excision have no effect upon the spasm and hypersecretion. Transverse resection cuts through a large number of nerve fibers on the lesser curvature and renders the pylorus functionless. To date, gastro-enterostomy has been regarded as the procedure of choice. The mortality is slight, from 1 to 3 per cent, and in cases of ulcer of the pylorus a cure is obtained in from 89 to 90 per cent. In ulcer of the lesser curvature, however, a cure is obtained in only from 30 to 31 per cent. Many ulcers are not benefited at all, even becoming

INTERNATIONAL ABSTRACT OF SURGERY

DECEMBER, 1920

ABSTRACTS OF CURRENT LITERATURE GENERAL SURGERY—SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Balfour, D. C.: The Utility of the Rubber Tube in Intestinal Surgery. *Surg., Gynec. & Obst.*, 1920, xxxi, 184

Technical difficulty and high risk are always factors in intestinal operations for malignancy, such as resections of the sigmoid, rectosigmoid juncture, or upper rectum. Among mechanical devices which modify these factors favorably the rubber tube has proved of distinct value as employed in connection with such operations at the Mayo Clinic.

In 1910 Balfour described the technique of "tube resections" of the sigmoid as then carried out at the Mayo Clinic where they have been employed for some time. The value of the tube had been recognized for a number of years by certain English surgeons. Modifications of the technique as described in this article have brought about better results and a definite increase in operability. Balfour draws attention to these facts by presenting abstracts of case reports representing some of the conditions in which the rubber tube has been employed and illustrating its utility in intestinal surgery.

The tube used is $\frac{3}{4}$ in. in diameter and $\frac{1}{2}$ m. in caliber and has a lateral eye 1 in. from the upper end. After the resection is made the tube is passed through the open end of the lower segment into the rectum and anus where it is secured by an assistant who draws it downward until its upper end is brought below the cut end of the lower segment. The cut ends of the bowel are then approximated and fixed by two stay sutures, one at the mid-point of each lateral wall of the bowel. A heavy (No. 2) chromic catgut suture is introduced from the mucus side at one stay suture and continued posteriorly, including the muscle and mucus layers until the second stay suture is reached. It is then continued forward in the usual manner until the circular anastomosis is completed.

The tube is then passed up the bowel until its upper end is from 3 to 12 in. above the level of the anastomosis. Its correct height must be gauged by the case with which it takes its position in the upper segment. It is then secured in its best position by a heavy catgut suture placed close to the level of anastomosis in order that it will be invaginated with the anastomosis in the next step of the operation. The invagination is made by supporting the bowel with fine-toothed forceps which grasp it at points about 1 in. below the level of the anastomosis while an assistant draws the anastomosis downward about 1 in. into the lower segment by means of traction on the tube. The invagination, which is an important part of the operation, appears, when completed, like a small intussusception. The two segments are fixed in this position by three or four interrupted sutures. Excellent results follow even when it is impossible to produce such an invagination or to unite the ends of the bowel perfectly over the tube, and also in cases in which a visible defect in the line of anastomosis is present (usually on the posterior side). Faecal fistulae which may follow are insignificant and heal spontaneously. As a rule the abdomen may be closed without drainage.

The abstracts of cases illustrating the utility of the tube cover such operations as resections for cancer of the sigmoid, diverticulitis of the sigmoid, the repair of faecal fistulae, operations for chronic and subacute obstruction, resection of the transverse colon, and the closure of a colostomy.

The use of the tube accords with sound principles of gastro-intestinal surgery. Its mechanical functions are called on chiefly in axial anastomosis, the closure of colostomies, and the repair of faecal fistulae. It prevents distention and gross leakage when an insecure anastomosis results from wide resection or fixed bowel segments, or both. In the invariable re-formation of adhesions it prevents the kinking or malposition that may result in obstruction by acting

testinal wall may play a part. Such conditions might cause very minute tears in the mucosa through which, by a sudden increase in the intra-intestinal gas pressure, gas and bacteria might be forced into the intestinal wall.

Pneumatosis cystoides is seldom diagnosed during life as there are no characteristic symptoms. The cysts are usually discovered during operation for some other pathologic condition or at autopsy. In several cases they have been the cause of intestinal stenosis. In 1 instance complete stenosis was followed by perforation and peritonitis. In another, death followed intussusception. Von Hacker reports a case in which a soft crepitation was present which should have led to the diagnosis.

In most instances the treatment has been directed toward the primary ailment. Some surgeons have left the cysts entirely alone, while others have punctured them. In cases in which the cysts were not opened and a second operation was necessary for some other condition it was found that the

only 3 cases.

A case reported by the author was that of a man 41 years of age who came to operation because of stenosis of the pylorus following ulcer. In this case two cysts were found in the lower part of the small intestine, one the size of a hen's egg and the other that of a man's fist. Both were composed of many small cysts. Between these two cysts were numerous smaller isolated cysts. Forty-five centimeters of the lower part of the ileum were resected. The stenosis was treated by posterior gastro-enterotomy. The patient recovered. *NEUBERT (2)*

Summers, J. E.: Acute Intestinal Obstruction, the Cause of High Mortality; How This May Be Reduced. *Ann Surg*, 1920, LVII, 201

The chief cause of the continued high mortality in acute intestinal obstruction is the tardy clinical recognition of the condition and the resultant too late operation. The fatal delay is often due to inability to differentiate between the symptoms of intestinal obstruction and those of acute abdominal perforations and infections. Ill-advised treatment by purgation or repeated doses of morphine also are responsible for many unnecessary deaths.

from the anus following several compound enemas. Under such circumstances an operation is the only rational procedure unless the history and physical findings indicate that these symptoms are not leading. If the diagnosis is made, the obstruction is relieved within the first twenty-four hours, and the gut is viable, the patient usually recovers. On the other

hand, if faecal vomiting occurs, the abdomen is distended, the respiration feeble, the pulse small and rapid, and the temperature elevated, an operation is almost useless and tends only to bring surgery into disrepute.

Faecal vomiting indicates that the intestinal current is reversed. Therefore when the patient's general condition permits, drainage should be effected high up in the jejunum, as near its origin as possible, by means of a No. 20 or 22 French catheter fastened in with a purse-string suture. The obstructed intestine may be regarded as possessing three distinct zones, the lower zone being more or less collapsed, the central zone containing chiefly gas, and the upper zone containing fluid. As Bonney says: "The drainage opening must tap the fluid-containing segment." Drainage of the jejunum overcomes the vomiting.

When there is gangrene of an annular type resection should not be done but the gangrenous area should be invaginated as an intussusceptum and the gut properly sutured so as to form an intussusceptum. The gangrenous area will later slough away and the continuity of the canal will be re-established. Resection is advisable only when the patient's condition permits it, otherwise resort should be had to a temporary life-saving measure such as the formation of an artificial anus or an anastomosis to side-track the obstruction.

The scientific principles upon which Crile bases his operative and postoperative treatment in general surgery are of particular importance in grave cases of abdominal surgery and especially in the treatment of acute intestinal obstruction.

well; establish proper drainage, and perform the shockless operation through anoci-association.

Brewitt, R.: Obstruction of the Bowel Due to Pelvic Exudates Following Gynecological Operations and Its Treatment (*Darmabschluss durch Beckenexsudat nach gynäkologischen Operationen und seine Behandlung*). *Zentralbl. f. Gynäk.*, 1920, XIV, 627.

Following various operations on the female genital organs heavy pelvic exudates are formed. These may entirely fill the true pelvis, and as they have no tendency to become softened, they press upon the intestine and interfere greatly with the movements of the bowel. Every movement of intestinal contents or intestinal gas further irritates the inflamed tissues and increases the inflammation and exudation. This explains why all conservative therapeutic measures, such as baths, enemas, etc., are of no benefit. The thick exudate hinders the flow of blood and lymph, and intestinal stasis results with tumefaction of the mucosa especially where the intestine enters the inflamed area. The clinical

only temporary. Zuntz, however, has reported a case of operative shock in which the beneficial action persisted and the patient lived.

For a single injection $\frac{1}{2}$ mg. should be given. The maximum dose is 1 mg. Because of the rapid action of the adrenalin there is no danger of a cumulative effect and the injection may be repeated within a few minutes if necessary.

The best site for the injection is in the third inter-space on the left side at the sternal border where the right ventricle may be reached. In his own case the author injected about 2 cm. to the left of the left sternal border, but states that if the injection is made close to the sternum the internal mammary vessels will be more surely avoided. Vogeler believes he injected the ventricular wall and did not enter the ventricular cavity. The action of the pituitrin is to be regarded as a "lashing" of the heart. Additional stimulation may be given hypodermically.

In the author's opinion intracardial injection is the quickest and most powerful method of stimulating the heart, and is indicated in cases of operative shock.

H. V. WAGNER (Z).

Halsted, W. S.: *Temperature of the Exclusion Ligations of Arteries*. *Bull. Johns Hopkins Hosp.*, 1920, **xxi**, 219.

In a series of very interesting papers Leriche has called attention to the value of what he terms "peri-arterial sympathectomy" in the treatment of various neuralgias, local ischæmias, reflex contractions of the Babinski-Froment type, and other affections. The author's interest in Leriche's work was reawakened by an observation made in the surgical clinic of the Johns Hopkins University only a few weeks before this paper was written.

In 1918 he ligated the left subclavian and carotid arteries near their origin from the aorta for the cure of a huge subclavian aneurism. For a year the aneurism decreased steadily in size. Then for a year he lost track of the patient. About two months ago he succeeded in tracing him and persuaded him to let him excise the aneurism which in the period of non-observation had developed a faint pulsation and had become slightly larger. About four hours after this operation, at which the aneurism was excised and the subclavian and axillary arteries were ligated, it was noticed that the left hand and

about as warm as the right. The temperature of the hand and forearm varied from day to day and from hour to hour. Certain small and quite well-defined areas remained uniformly cool, while the hand and the forearm maintained their normal warmth.

The patient was observed frequently throughout the year following the operation. Slowly but steadily the pulseless tumor diminished in size during this period. Then for a year the patient was lost sight of. Exactly two years after the first operation he returned to the hospital at the author's solicitation. Then for the first time since the operation a very faint pulsation was discernible. The tumor measured in its transverse (frontal) diameter precisely the same as when last seen a year before, the anteroposterior (sagittal) measurement, however, showed an increase of about 4 cm. Halsted decided that the aneurism should be excised, and on the twentieth of April, 1920, performed another operation. About four hours after this second operation the hand and forearm, which prior to, and ever since, the first operation had been markedly cold, became strikingly warm. It had remained warm, except in certain areas, to the time this paper was written.

Halsted believes it improbable that the ligation of the cephalic vein was in any way responsible for this indubitable improvement in the circulation. He attributes it to vasodilatation incident to the ligations of the subclavian and axillary arteries—to the crushing of their nerves.

GEORGE E. BELBY

Ochsner, A. J., and Schneider, C. G.: *Fatal Post-operative Pulmonary Thrombosis*. *Ann Surg.*, 1920, **lxxii**, 91.

The authors review 37 of the most important monographs on pulmonary thrombosis which have appeared in the literature during the past seventy years, and analyze the causes with a view to determining prophylactic methods.

All authorities agree that no single cause is responsible for the condition, each laying more or less stress upon several of the following twelve factors, which are arranged in the order of their importance: (1) local infection; (2) anæmia; (3) slowing of the blood stream; (4) subnormal general physical condition; (5) cachexia; (6) micro-organisms in the blood; (7) excess of white blood cells; (8) imperfect hæmostasis; (9) traumatization of tissues with retractors, etc.; (10) injury to the veins of the extremities due to a badly arranged operating table; (11) injury to the intima of the veins; (12) excess of calcium salts in the blood.

All deaths from pulmonary thrombosis occurring in the surgical department of the Augustana Hospital, Chicago, during the five years from Jan. 1, 1915, to Jan. 1, 1920, have been tabulated, and an analysis has been made of the history of each case to determine how the thrombosis might have been prevented.

About five weeks after the operation the hand and forearm became cold again, at first in small areas, but remained cold for only a day or two. On the sixty-ninth day after the operation the back of the left hand was quite cold, whereas the left palm was

testinal wall may play a part. Such conditions might cause very minute tears in the mucosa through which, by a sudden increase in the intra-intestinal gas pressure, gas and bacteria might be forced into the intestinal wall.

Pneumatosis cystoides is seldom diagnosed during life as there are no characteristic symptoms. The cysts are usually discovered during operation for some other pathologic condition or at autopsy. In several cases they have been the cause of intestinal stenosis. In 1 instance complete stenosis was followed by perforation and peritonitis. In another, death followed intussusception. Von Hacker reports a case in which a soft crepitation was present which should have led to the diagnosis.

In most instances the treatment has been directed toward the primary ailment. Some surgeons have left the cysts entirely alone, while others have punctured them. In cases in which the cysts were not opened and a second operation was necessary for some other condition it was found that the cysts had entirely disappeared, leaving behind only small scars on the serosa. Therefore it may be concluded that the only indication for intestinal resection is marked stenosis. The prognosis is favorable. Death due to pneumatosis cystoides occurred in only 3 cases.

A case reported by the author was that of a man 41 years of age who came to operation because of stenosis of the pylorus following ulcer. In this case two cysts were found in the lower part of the small intestine, one the size of a hen's egg and the other that of a man's fist. Both were composed of many small cysts. Between these two cysts were numerous smaller isolated cysts. Forty-five centimeters of the lower part of the ileum were resected. The stenosis was treated by posterior gastro-enterostomy. The patient recovered. NEUBERT (Z)

Summers, J. E.: Acute Intestinal Obstruction, the Cause of High Mortality; How This May Be Reduced. *Ann Surg*, 1920, LXII, 201

The chief cause of the continued high mortality in acute intestinal obstruction is the tardy clinical recognition of the condition and the resultant tootlate operation. The fatal delay is often due to inability to differentiate between the symptoms of intestinal obstruction and those of acute abdominal perforations and infections. Ill-advised treatment by purgation or repeated doses of morphine also are responsible for many unnecessary deaths.

hand, if faecal vomiting occurs, the abdomen is distended, the respiration feeble, the pulse small and rapid, and the temperature elevated, an opera-

effected high up in the jejunum, as near its origin as possible, by means of a No. 20 or 22 French catheter fastened in with a purse-string suture. The obstructed intestine may be regarded as possessing three distinct zones, the lower zone being more or less collapsed, the central zone containing chiefly gas, and the upper zone containing fluid. As Bonney says: "The drainage opening must tap the fluid-containing segment." Drainage of the jejunum overcomes the vomiting.

When there is gangrene of an annular type resection should not be done but the gangrenous area should be invaginated as an intussusceptum and the

the obstruction.

The scientific principles upon which Crile bases his operative and postoperative treatment in general surgery are of particular importance in

well; establish proper drainage; and perform the shockless operation through anoci-association

Brewitt, R.: Obstruction of the Bowel Due to Pelvic Exudates Following Gynecological Operations and Its Treatment (Darmabschluss durch Beckenexsudat nach gynäkologischen Operationen und seine Behandlung). *Zentralbl. f. Gynaek*, 1920, xlv, 627

Following various operations on the female genital organs heavy pelvic exudates are formed. These may entirely fill the true pelvis, and as they have no tendency to become softened, they press upon the intestine and interfere greatly with the movements of the bowel. Every movement of intestinal contents or intestinal gas further irritates the inflamed tissues and increases the inflammation and exudation. This explains why all conservative therapeutic measures, such as baths, enemata, etc., are of no benefit. The thick exudate hinders the flow of blood and lymph, and intestinal stasis results with tumefaction of the mucosa especially where the intestine enters the inflamed area. The clinical

formerly that patients with obstruction of the air passages should not be given ether. The author, however, has never experienced any difficulty in administering ether in goiter cases. If it is given slowly it does not cause irritation or produce cyanosis. In cardiac cases in which the heart has become affected by long-standing dyspnoea, cases of true exophthalmic goiter, and those fairly common cases of goiter which are not typically exophthalmic but exhibit cardiac symptoms, the lighter the anaesthesia the better.

The main disadvantage of administering ether by the intratracheal method lies in the difficulty and risk attending the passage of the tube in cases of severe obstruction, especially when the trachea has become displaced and narrowed. The depth of anaesthesia necessary for this procedure is in itself dangerous. Otherwise the method has distinct advantages and produces a light anaesthesia which is easily maintained.

Mr. James Berry took part in the discussion from the point of view of the surgeon. He stated that in all goiter operations he has entirely abandoned the use of chloroform, considering that ether administered by the open method and sparingly is by far the best anaesthetic. The anaesthetist should be on his guard especially in cases in which there are respiratory or cardiac complications. It should be borne in mind that the dyspnoea produced by innocent goiter is due chiefly, if not entirely, to direct pressure upon the trachea rather than to irritation of the recurrent laryngeal nerves. If the exact position and shape of the trachea are known to the anaesthetist, he can often relieve the embarrassment of respiration by slightly changing the position of the head and neck. No doubt there are some cases of exophthalmic goiter which are dealt with best by local anaesthesia, but for the majority of cases Berry believes that light ether anaesthesia is preferable.

Goodall is of the opinion that the performance of any thyroid operation (excepting possibly simple ligation) under any local anaesthetic is undesirable on psychic grounds. The administration of a local anaesthetic containing adrenalin is positively dangerous as it is apt to induce auricular fibrillation and possibly ventricular fibrillation. Ventricular fibrillation has been the cause of sudden death in thyroid operations.

The chief points to which Goodall would pay attention in determining the suitability, or otherwise, of a case for operation under an anaesthetic are: (1) the degree of myocardial exhaustion present, (2) the or absence of (4) the height cases there exhaustion.

blood pressure tends to go up, and may become doubled. Under such increased pressure an exhausted, degenerated, or excessively dilated myocardium may become acutely dilated or fibrillate.

The best cases for an anaesthetic and operative no definite myocardial or systolic blood pressure. Electrocardiographic and X-ray examinations, together with mapping out of the field of cardiac response, are essential for the estimation of the condition of the myocardium.

Low stated that the only cases which require special treatment from the point of view of anaesthesia are those in which the trachea is pressed upon or constitutional symptoms, such as exophthalmos or those indicating a heart condition, are present. The question as to whether a general or a local anaesthetic should be given is still unanswered. In Low's opinion the ideal anaesthetic is either intratracheal ether or oil-ether given by rectum. The next best, he believes, is ether given on a mask, but if this is used the anaesthesia must be kept light throughout the operation. Every precaution is necessary. The condition is serious and therefore anaesthesia should be induced only by a skilled anaesthetist.

ISABELLA C. HERR

Rodriguez and Egara: General Anaesthesia (Sobre anestesia general). *Semana med.*, 1920, xxvii, 577

In an extensive article covering the entire subject of anaesthesia the author gives his conclusions as follows:

1. The anaesthetic of choice for minor surgery, short operations, and even extensive operations upon the extremities in which absolute muscular relaxation is not necessary, is nitrous oxide and oxygen. The administration should be entrusted to a skilled anaesthetist. The apparatus used must allow graduation of the amount given and easy regulation of the proportions of the two gases. It should be fitted with a washing bottle to take up impurities, bags for rebreathing as near the mask as possible, and inspiratory and expiratory valves of easy access and management. It should permit the free and rapid change to ether in case of necessity and the heating of the anaesthetic gases. The Gwathmey apparatus is thought to fulfill these requirements best.

2. For all operations in which absolute muscular relaxation is necessary, and especially in abdominal operations, anaesthesia may be induced first with nitrous oxide and then maintained with ether.

3. As regards danger to the patient both during and after anaesthesia chloroform is less safe than ether. When it is given, however, the Esmarch mask and the Roth-Drager apparatus should be used. Chloroform is given best with ether.

4. Open or partially open methods of inducing anaesthesia are better than closed methods. The

ryngal insufflation is of value in operations on the neck, face, or cranium, or those performed with the patient in the ventral position. In addition to the fact that

tures which often become cured without operation. The presence of other symptoms of hæmorrhage, such as anæmia and ascites, are essential to warrant surgical measures. When they are present the slow pulse should not be regarded as contra-indicating operation. In such cases the persistence of the bradycardia after continued hæmorrhage is a favorable symptom provided immediate operation is undertaken.

Regarding treatment the author points out that in many cases packing is sufficient to stop the bleeding. Operation should be performed under local anæsthesia, a little ether being given while the liver is being handled. Chloroform is contra-indicated.

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ood trans-
Kreuter's

AGEMANN (Z).

Zerbino, V: The Relation between the Hydatid Cysts of Children and Those of Adults (Relaciones entre el quiste hidático del niño y el del adulto). *An Fac de med Univ de Montevideo*, 1920, v, 46.

Hydatid cysts are pre-eminently a disease of infancy, childhood, and early adult life up to about the age of 35 years. Early life up to the age of puberty constitutes the period in which they are most common. The frequency of cases within this period includes at least one-third of all cases. The period of greatest frequency is between 20 and 25 years.

Hydatid infection may occur at any age but depends largely upon close contact with the soil, which is more favorable in childhood.

The development of hydatid cysts seems to take place very easily and rapidly in infancy, the cysts becoming manifest in their most common locations in from one to six years. Multiplicity of hydatid infection in the same child is frequent, a fact to be explained upon the basis of frequent exposure and contamination.

Vesiculization and suppuration of hydatid cysts are less frequent complications in children than in adults. They may occur, however, at almost any age and in almost any stage of evolution of the cyst according to the particular organ involved. The cyst may reach a very large size in a relatively short time.

Neither vesiculization, suppuration, nor the size of the cyst is a criterion of the age of the cyst. Its development and senescence depend upon the growing conditions of the medium which is furnished the parasite. The author's statistics show that from two to eight years are sufficient for the cyst to be recognized clinically and also to attain considerable size.

The growth of cysts is not equal in all tissues nor uniformly progressive in a given location. They may undergo periods of inhibition and exacerbation.

WILLIAM R. MEEKER.

Carro, S.: The X-Ray Diagnosis of Gall-Stones (El diagnóstico radiológico de los calculos hepaticos). *Prog. de la clin*, Madrid, 1920, viii, 181.

in such cases, so that the image of a stone which would otherwise appear indistinctly is unrecognizable. Moreover, the location of the gall-bladder may be inconstant and vary within wide limits from the normal anatomical position of the ninth costal cartilage.

In cases of enlarged liver, ptosis, adhesions in the

conditions in the liver, such as cirrhosis, congestion, etc., and the viscosity of the bile surrounding the calculi are other features which will affect the diffusion of rays and the projection of the image onto the plate. In addition it is well known that stones composed of pure cholesterol are difficult to demonstrate, and the majority of stones are made up for the most part of this substance. Those containing a fair amount of calcium salts are more easily recognized by their nearly circular outline, the comparatively dense border, and the more or less transparent central portion. The composition of the stone is therefore of greater importance than its size.

Before examination the gastro-intestinal tract should be thoroughly emptied. Since the presence of gas in the stomach favors the

should then take a ventral position above the plate with the arms crossed so that the right upper quadrant lies in complete contact with the plate. The tube is then

In the interpretation of the plate there are many causes for confusion. Calculi of the right kidney, enteroliths, calcified costal cartilages, calcified lymph glands, and pancreatic calculi have all been mistaken for gall-stones. The percentage of successful demonstrations by the X-ray is therefore very low, the general average of all operators being 2 or 3 per cent. The highest claims are between 10 and 15 per cent. In many hundreds of

in from 5 to 10 per cent of cases.

WILLIAM R. MEEKER.

SURGICAL INSTRUMENTS AND APPARATUS

Goodloe, A. E.: *The Dangers, Failures and Difficulties in Foreign-Body Bronchoscopy; A New Instrument for Their Elimination.* *Am. J. Surg.*, 1920, xxxiv, 207.

Failures in bronchoscopy for foreign bodies may be due to one or more of the following factors:

1. Inexperience in the use of the required instruments.

2. Lack of mechanical skill and ability and of familiarity with the appearance and anatomy of the bronchial tree as seen through a tube.

3. Failure to ascertain previously the size and nature of the body to be removed, its exact location, and the length of time it had been present in the bronchus or elsewhere.

4. The difficulty in seeing through a tube with a lumen which is small and through which a forceps carrier is inserted.

5. The fact that both hands must be used to hold the instrument, one to hold the tube and the other to manipulate the forceps. This requires harmonious action, which necessitates much practice.

6. The fact that in some instances the forceps at first selected will not grasp the object and must then be withdrawn and replaced by another pair. This substitution means a loss of time which often jeopardizes the patient's life.

7. The obscuring of the light at the distal end of the tube by mucus, blood, etc., or by the forceps carrier. A tube with the light reflected from without, at the proximal end, is cumbersome and renders it necessary for the operator to work between the light and the foreign body to be removed.

8. The pushing of the object further down the bronchi, due to the failure of the forceps to pass it successfully because of lack of room or unskillful manipulation.

9. The crushing of the foreign body. As a result of crushing, particles which are too small to be removed are left behind and set up inflammation. This occurs quite frequently when the foreign bodies are of vegetable composition.

The first three obstacles to success enumerated may be overcome by practice and patience. The others may be eliminated, at least in the majority of cases, by the use of the instrument described in this article, the advantages and features of which are outlined as follows:

1. The instrument is a combined bronchoscope and forceps so constructed that it will grasp practically any object of any shape and any size that may find its way into the trachea or bronchi and in the majority of cases does away with the use of forceps of many and various shapes and sizes inserted through the barrel.

2. Vision is had at all times, whether the forceps is closed or open, as no instrument is passed through the barrel.

3. No shadows are cast upon the object on the field of operation or within the barrel.

4. The instrument will grasp and hold almost any object, whether it is hard and round like a glass ball, or soft like a peanut, for it does not depend upon the same principle as other forceps. It has only one thin jaw which passes over the object, closes up the tube behind, and works the object up to the barrel or, if small enough, into the barrel.

5. It is easy to determine when the object to be removed is reached as the forceps can be lifted up and down by the trigger-like motion of the index finger and this will cause the foreign body to move.

6. There is much less danger of driving the foreign body further down into the deeper bronchi than with other bronchoscopes as in this instrument there is only one thin forceps blade, instead of two, to pass the object, and this blade is parallel to the wall of the bronchus.

7. Impacted bodies may be worked loose by a simple up-and-down motion of the forceps blades without disturbing the relation of the forceps blade to the end of the barrel or object.

8. If secretions too thick and tenacious to be drawn through the suction tube obscure the view, they may be pushed aside with the forceps blade.

9. Abscesses with small openings into the lumen of the trachea or bronchi may be opened and enlarged so that pent-up secretions may escape.

10. While the bronchoscope is being withdrawn with the foreign body, it can be seen whether or not the body remains within the grasp of the instrument. This is not possible when forceps are used through the barrel. Often a foreign body has been lost during its withdrawal.

11. By regulating the friction-control screw at the

grasp may be obtained by reversing the process. Similar regulation may be obtained also with the thumb control without disturbing the screw.

12. Granulating tissue in which the object has become embedded may be curetted away. The shape and size of the forceps, together with its double motion, make it an excellent curette, when necessary, and it is always ready.

13. Because of the mechanical arrangement of the light and the drainage tube, the light is never obscured unless the secretions are exceptionally thick and tenacious. The opening of the drainage tube into the barrel is in the front and at the apex of the light bulb, and therefore the secretion is taken up before it reaches the light. Every part of the tube can be instantly taken apart for cleaning and sterilization.

14. The instrument may be operated with one hand.

15. If the operator should choose to use forceps or hooks, they may be employed in the usual way as the lumen of the instrument is the same in diameter as that of the average sized bronchoscope.

16. The instrument may be employed also for esophagoscopy.

Orro M. Rott.

4. Knowledge on the part of the patient regarding the presence of an abdominal tumor mass. This was recorded in 55 per cent of the cases.

5. Ascites and hæmorrhage. These occurred in about 20 per cent of the cases.

In the diagnosis the X-ray examination, stomach analysis, and various laboratory tests proved to be of little value.

Surgical treatment is difficult to apply to patients suffering with carcinoma of the pancreas because of the increase in the coagulation time of the blood, the fatal results of free pancreatic secretion in the abdominal cavity, and the slow formation of adhesions in the presence of pancreatic exudate. The author prefers palliative treatment consisting of cholecystenterostomy and drainage of the bile. The condition is rapidly fatal, however, death usually resulting within a few weeks. Speed lays stress upon the importance of examining the pancreas when operating in the region of the pylorus or gall-bladder.

In autopsies following death from carcinoma of the pancreas it was found that:

1. The head of the pancreas was the portion most often involved by the carcinoma, the body next, and the tail least often.

2. Metastasis usually occurred first in glands around the pancreas and the gall-tracts, and next in the liver.

3. The common duct is completely embedded in the head of the pancreas in 62 per cent of human cadavers, in the remainder it lies in a deep groove in the head of the gland.

4. There are two forms of carcinoma of the pancreas, one type the cylinder cell adenocarcinoma, and the other carcinoma simplex.

HAROLD K. BEGG

MISCELLANEOUS

Kaestle, C.: The Healing Effect of Air in the Abdominal Cavity (Heilwirkung der Luftfüllung der Bauchhöhle). *München med. Wchnschr.*, 1920, lxxvii, 714.

The author reports three cases the cure of which he ascribes directly to the injection of air into the abdominal cavity. In all of these cases there was severe pain in the epigastrium associated with a decrease in the patient's general strength and

was allowed to remain in the body. Immediately after its injection marked improvement was noted in every instance. This improvement continued, and in five or six weeks recovery had resulted, the pain and the enlargement of the liver and gall-bladder having disappeared entirely. All other therapeutic measures were discontinued. The cause of the recovery is difficult to explain. Especially in the first case it is probable that the pressure change in the abdomen, and perhaps also the breaking up of adhesions, had something to do with the result.

E. KOENIG (Z)

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Coley, W. B.: Sarcoma of the Clavicle—Results Following Total Excision. *Ann Surg.*, 1920, lxxxi, 231.

In a previous paper the author reported a total of 65 cases of sarcoma of the clavicle, nearly all of which had been treated by total or partial resection. In addition to these he has had under his own observation since that time 5 other cases which are herewith reported.

This article contains also a complete table of all the reported cases of sarcoma of the clavicle, totaling 105.

Coley summarizes his conclusions from this study as follows:

1. Malignant tumors of the clavicle are comparatively rare, only 16 cases having occurred in more than 275 cases of sarcoma of the long bones observed personally. The greatest number belonged to the sarcoma group, the few cases of carcinoma being metastatic developments from some recognized or unrecognized primary focus.

2. Sarcoma of the clavicle occurs more frequently in men than in women, probably because the

clavicles of the male are injured more frequently than those of the female.

3. In the great majority of cases sarcoma of the clavicle is associated with recent local trauma, either in the form of a direct blow or muscular strain.

4. A clinical history of pain and localized swelling of the clavicle usually following recent injury, a rapid increase in size, and a fairly characteristic X-ray picture will usually make an early diagnosis comparatively easy without the necessity for an exploratory operation.

5. Local removal of the tumor or even a limited partial resection should be avoided. The treatment of choice, while the tumor is in an operable stage, should be: (1) total excision of the clavicle as soon as the diagnosis is made; and (2) a course of sys-

temized by local or regional treatment with radium or the X-rays.

6. The mortality of total excision of the clavicle under modern treatment is very low and the functional use of the arm remains unimpaired.

EMIL C. ROBITSEK.

normal and pathologically increased pressure to fall. Sometimes also the pulse is slowed, the respiration becomes deeper, and the pupils are dilated, while in a few cases there is loss of consciousness or clonic epileptiform convulsions. By this experimentally produced arterial ischæmia of the normal brain a condition resembling commotio cerebri has been brought about.

The lowered pulse rate after spinal puncture the author explains as follows:

Spinal puncture relieves the pressure in the spinal canal, and if the pressure of the fluid in the subarachnoid spaces of the brain is unchanged the base of the brain, especially the medulla, sinks back into the foramen magnum and presses against the hard bone. In this way the circulation of the brain is cut off, i e., an ischæmia results from the pressure of the medulla on the blood vessels.

The correctness of this theory remains to be demonstrated by systematic measurements of the pressure of the spinal fluid immediately after contusions of the brain. Low pressures will confirm it.

Borr (Z).

Demmer, F.: The Indications for the Removal of Foreign Bodies from the Brain (Zur Indikation der Fremdkörperoperation im Gehirn) *Wien klin Wchnschr.*, 1920, xxviii, 55

This is a valuable treatise, a continuation of studies begun at the front dealing particularly with penetrating wounds of the brain. The generally poor results frequently observed late in the after-treatment of such cases after an apparently favorable early result are analyzed on the basis of autopsy findings and illustrated by one of the author's cases.

A wound of the brain due to the penetration of a foreign body rarely heals without a reaction. In most cases encephalitic softening remains latent around the foreign body or the bullet canal for some time and then suddenly flares up near the periphery or bursts into the ventricles. Such foci are found not only around the foreign body but also around the wound canal.

During the primary wound period and after operations for the removal of a foreign body too rapid healing must be prevented. Reasoning from the premise that even apparently mild symptoms produced by a penetrating wound of the brain which has been healed for a long time reveal the presence of an encephalitic focus, the author concludes that operation should be performed more frequently in such cases. Whenever a reactionless healing (encapsulation) takes place, manifested by the

these have been gradually made more severe for a period of weeks under excessive mental and bodily strain and have been tolerated without any untoward symptoms. Otherwise he believes the removal of the foreign body is indicated.

O. FISCH (Z).

Ochsner, A. J.: Endothelioma of the Brain. *Surg Clin. Chicago*, 1920, iv, 711.

Nine months before admission to the hospital the patient, a man 27 years of age, woke up one morning with a feeling of numbness in his right hand and arm which was associated with twitching in the right side of the face and thickness of speech. The twitching in the face disappeared after four or five minutes, and the numbness in the arm and the thickness of speech in about four hours. The sensation in the hand never returned completely.

At one-month intervals the patient continued to have other attacks which were similar to the first except that speech was not affected. One month before operation he had convulsions in the right arm. These began by twitching of the fingers of the right hand, which gradually extended to the right arm. As the convulsion progressed the arm was drawn up over the head. When the arm was fully drawn up over the head he lost consciousness. During the convulsion he frothed at the mouth and held his breath, but no other part of the body took part in the twitching. Before admission to the hospital he had been spitting blood which seemed to come from the nose or sinuses. His eyes were blood-shot. In the beginning the attacks involved only the right arm, but later they extended up the right arm and down the back on the right side.

On examination the pupils were found to be equal and reacted to light and accommodation. The sclera showed innumerable subconjunctival hemorrhages. There was slight horizontal nystagmus on both sides. The neurological examination was negative except for a diadokokinesis and an astereognosis for small objects in the right hand. Motor, sensory, and cranial nerves, and co-ordination and Wassermann tests were negative.

From the history and findings it seemed evident that the condition was due to an irritating lesion in the region of the left precentral convolution in the region of the arm center. The most common tumors producing such a lesion are endothelioma, glioma, tuberculoma, gumma, and cyst. The negative Wassermann test on three occasions ruled out syphilis.

The patient was operated on under ether anesthesia. The incision was made so as to expose the fissure of Rolando. Careful palpation revealed in the middle of the fissure of Rolando an area about the size of a half-dollar which was firmer than the rest of the brain. Two silk sutures were inserted through this area and held taut while the dura was incised between them and a grooved director inserted. The dura was then incised at each corner, so that a cross-shaped incision was made.

This anterior flap of dura was elevated with great difficulty. When the dura was peeled off a gray area about 2 in. in diameter, which was rather firm to palpation, was revealed. The tumor was excised and a fascia flap taken from the right leg was sutured over the area from which the dura was removed.

congenital division was present in 16. Little found a transverse division of the sesamoid in only 1 plate in 1,000.

The sesamoid bones of the great toe are not rarely the seat of traumatic damage and are subject to all of the varieties of trauma to which the patella is exposed. In a general sense the mechanism of the injuries in both cases is the same.

In one case of luxation of the mesial sesamoid there was marked local swelling and the sesamoid could be plainly felt on the inferior and mesial aspect of the joint. The bone was removed under local anesthesia and the diagnosis confirmed.

These cases are not those which arouse the greatest interest, but rather those in which the X-ray plate shows the division to be more or less transverse and the patient is unable to furnish a definite history of violence from without or of sudden onset of the condition. In nearly all of the cases reported com-

fragment. In most cases these fragments were unequal in size.

infrequently occurs as a congenital anomaly and without producing symptoms. Freiberg states, however, that it is possible to distinguish between the X-ray pictures of traumatic division and congenital cleavage. The fracture shows sharp and pointed corners, whereas in congenital cleavage the ends are apt to be more rounded; the ends of the fracture line show a break in the cortical substance, while in congenital cleavage this is continued around; and the fragments of the traumatic variety are of

produced is the same, whether the division of the sesamoid is congenital or due to trauma. When in the act of rising on the toes the great toe is ab-

as by the effect of certain types of shoes, the stress upon the sesamoids in the short flexor becomes greater in this position. The sesamoid may thus become the site of a cross breaking strain which may separate it into two parts, or if a general cleft occurs, may result in damage to the fibers which connect the two segments.

The treatment consists at first of the application of a thick pad of felt immediately posterior to the point of tenderness and its retention by means of adhesive plaster. This pad should be replaced every few days until the tenderness is gone. An anterior heel or cleft of leather, $\frac{3}{4}$ to $\frac{3}{8}$ in. thick and $1\frac{1}{4}$ to $1\frac{1}{2}$ in. wide, should then be inserted between the layers of the sole of the shoe just behind the metatarsophalangeal joints and exercises should be instituted to develop the flexor power of the toes

LEO C. DONNELLY.

Monahan, J. J.: The Etiology of Bunions. *Med. Times*, 1920, xlviii, 149

The author discusses briefly and rejects the common theories as to the cause of bunions, namely, certain types of shoes, dislocation of the sesamoids, and heredity.

In the X-ray pictures of bunion-deformed feet he has noted three abnormal conditions: (1) abduction and outward dislocation of the phalanx; (2) enlargement of the internal lateral portion of the distal head of the first metatarsal bone; and (3)

die

BEVERIDGE H. MOORE.

FRACTURES AND DISLOCATIONS

Grile, W. D.: The Treatment of Septic Fracture. *Illinois M. J.*, 1920, xxxviii, 144

The records on which this article is based include 378 cases of septic fractures of the femur and 27 cases of septic fractures of the knee joint, many of which were treated at the Edmonton Military Hospital in England.

The author states emphatically that not only the fracture but also the whole limb, the muscles, fascia,

prevent function.

An active blood supply should be assured to all the tissues. Therefore tight bandages are contraindicated and free drainage should be effected when the tension of pus blocks the circulation.

When sepsis occurs from surface inoculation, free dependent drainage is advocated even at the sacrifice of large sections of muscle. Sepsis is combated also by the application of fomentations

trigeminal neuralgias are to be differentiated from major trigeminal neuralgias. For the latter the gasserian operation, the author believes, is unquestionably the proper therapeutic procedure.

In the five types of pseudotrigeminal neuralgia which may be mistaken for trigeminal neuralgia there is every reason to refrain from a trigeminal neurectomy if possible.

The article is illustrated and the histories of cases of the different forms of neuralgias are given.

HOWARD A. MCKNIGHT.

Ferrarini, G.: The Treatment of Fistulæ of Stenon's Duct, and Especially the Operation of Disinnervation of the Parotid Proposed by Leriche (Sulla terapia delle fistole del dotto di Stenone ed in particolare sull' operazione di disinnervazione della parotide proposta dal Leriche). *Arch. ital. di chir.*, 1920, II, 207.

For several years Ferrarini has been investigating the possibility of creating collateral escape for the secretion of the parotid gland. In this work he has studied the method of treating salivary fistulæ of Stenon's duct and especially the method of disinnervating the parotid gland practised by Leriche.

Most of Ferrarini's studies have been made on dogs, but he has performed Leriche's operation in several clinical cases.

From his animal experiments the author draws the following conclusions:

1. Section of the secretory nerve causes a diminution in volume of the parotid or submaxillary gland so that after a month or so it is reduced to one-third its normal weight. Such diminution appears to continue subsequently.

2. Simple atrophy occurs in the zone contiguous to the gland. Epithelial necrobiosis is rare.

3. Edema and an increase in thickness of the interstitial connective tissue occurs but there is no true sclerotization of the glandular parenchyma.

4. The lesion is transitory and attains its maximum about a month or a month and a half after the operation.

A complete and permanent recovery resulted in all the clinical cases in which the Leriche operation was done.

From these facts Ferrarini concludes that Leriche's operation is of great value in the treatment of rebellious fistulæ of Stenon's duct. From the physiopathological viewpoint, however, the effect of disinnervation of the parotid upon the quantity and quality of the salivary secretion is still to be determined.

The author refers to the recent revival by Moresstin in France and by Donati in Italy of Viborg's old method of treating fistulæ of Stenon's duct by

to the operation. Viborg's method is not a simple procedure and is absolutely contra-indicated when infection is present. Leriche's method is not contra-indicated by sepsis. To date there is no method, and in Ferrarini's opinion it is probable that there never will be a method, of treating Stenon's fistulæ which can be applied to all cases. The choice of operation must be based upon the requirements of the particular case.

The operative procedures to which surgeons should give their approval are: ligation after complete isolation of the duct for cases in which infection is present and the duct is not embedded too extensively in cicatricial tissue; the DeSault puncture for cases of buccal fistulæ; and Leriche's disinnervation method for cases of infected, old, rebellious or adherent fistulæ behind the masseter muscle.

WILLIAM A. BRENNAN

NECK

Thompson, J. E.: The Relationship Between Ranula and Branchiogenic Cysts. *Ann Surg.*, 1920, LXII, 164.

An analysis of a series of cases of ranula associated with submaxillary cyst and cyst of the upper deep cervical region identical in anatomical structure and contents leads to the inference that these cysts have a common origin and probably result from fragmentation of a mother cyst.

The origin of the mother cyst is ascribed to the "cervical sinus" which is developed in connection with the external cleft depressions of the second, third, and fourth branchial clefts. This is carried from its original position by the migration and re-arrangement of the muscles of the neck during the development of the palate, pharynx, and tongue, and by the same agency is split up into several parts which lie in the upper cervical, submaxillary, and lingual regions. The muscles mainly responsible for this are those derived from the third and fourth branchial arches and those derived from the seventh, eighth, and ninth body segments behind the arches supported by the hypoglossal nerve.

Complete branchial fistula usually results from the persistence of part of the cervical sinus combined with perforation of the second cleft depression. The third cleft depression is very rarely perforated and the fourth practically never. A fistula passing into the pharynx through the second cleft depression always courses upward above the fork of the carotids above the glossopharyngeal nerve and opens into the tonsillar recess. A fistula passing through the third cleft depression passes upward below the fork of the carotids, between the glossopharyngeal and superior laryngeal nerves, and opens into the sinus pyriformis. A fistula passing through the fourth cleft depression passes downward, books around the subclavian artery on the right side or the aorta on the left side, and finally courses upward beneath the superior laryngeal nerve to reach the sinus pyriformis.

very large number of such cases tend to become cured spontaneously and therefore in many of Moresstin's cases the result may not have been due

In rare cases the tibial fracture is compound, a sharp

the swelling requires aseptic treatment

too loose. Constriction by a cast is dangerous and evidenced by persistent or increased swelling of the toes, blueness, or pain. A cast that is too loose will not hold the fragments in apposition. If a cast becomes loose in two or three weeks it should be tightened or replaced.

In cases of swelling the blebs should be opened and dressed aseptically. If the swelling becomes alarming it may be necessary to open the leg and allow the extravasated fluid to escape, treating the incision aseptically. This is done best in a fracture box.

Whatever apparatus is used in the treatment the following points must be borne in mind.

- 1 The alignment of the bones of the leg must be maintained.

- 2 Rotation of either fragment on its long axis must be prevented.

- 3 The foot must be kept extended at right angles to the leg.

- 4 Lateral deviation must be prevented.

- 5 The anterosuperior spine of the tibia, the center of the patella, and the inner side of the great toe must be in a straight line.

- 6 The fracture should be inspected from both the anteroposterior and the lateral aspects.

MARCUS H. HOBART

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Rath, H.: Accident Surgery and Secondary Wound Healing (Ueber Unfallchirurgie und sekundären Wundverschluss). *Nederl. Tijdschr. v. Geneesk.*, 1929, lxxv, 1797.

Rath recommends the application of war wound therapy as developed in France to accident injuries. Infected wounds should be disinfected by the Dakin method, and when the microscopic examination shows that the pyogenic organisms have almost disappeared there should be closed either by suture or by

shortened.

For secondary union the wound must be completely disinfected. There should be no dead tissue and the tension should not be too great. The wound should be well prepared twenty-four hours before the operation. The beginning scar tissue should be cut away and all superfluous granulation tissue re-

moved. Tendon and fascia or, when the latter is not feasible, fat flaps may be used to cover the wound. The skin margins being undermined. Catgut should be employed for the deep tissues and silkworm gut for the skin. Before grafting the wound must be well exposed and aseptic. The grafted area as well as the area from which the graft is taken should be covered before bandaging with Carrel's wax which has been melted over a water bath. This should be either sprayed on the wound or allowed to drip on it from a brush. It should then be covered with a thin sheet of cotton and over the cotton a second layer should be applied. This dressing may be removed in six days. The flaps remain on the wound as they do not adhere to the wax. The post-operative treatment consists in the use of Dakin's solution.

The composition of Carrel's wax is as follows:

Paraffin, melting point 52 degrees, 18 parts; paraffin, melting point 40 degrees, 6 parts; ordinary yellow wax, 2 parts, and castor oil, 1 part.

FLACKEMANN (Z).

Lotsch, F.: The Healing Processes in the Conservative Treatment of Cystic Osteomyelitis (Heilungsvorgänge bei konservativ behandelter cystischer Knochenmarkfibrose). *Deutsche med. Wchnschr.*, 1929, lxi, 620.

In proliferating fibrosis of the bone marrow there is a proliferation of the connective tissue elements of the marrow at the expense of the hæmatogenous elements and the bone tissue. The periosteum remains entirely unaffected. Frequently the giant cells of the bone marrow are involved in this proliferation (Eperlin). Through coagulation of the fibrous tissue cystic degeneration occurs. The cysts

tion for such radical procedures as resection or amputation. It is sufficient to lay open the focus and curette it thoroughly. The periosteum may very quickly undergo degeneration and pathologic fractures may occur very frequently. The roentgen-ray shows a more or less marked degeneration of the cortex, even when the periosteum remains intact.

The author followed up the healing processes by X-ray examination in a case of a single bone cyst of the humerus. Nine months after the injury the medullary cavity of the shaft appeared very clearly to be filled with calcium-containing bone substance.

WOLFSOHN (Z).

Sarria, P. A.: A Contribution to the Study of Bone Transplantation (Contribución al estudio de los injertos óseos). *Prog. de la clin.*, Madrid, 1929, viii, 159.

In a very detailed consideration of the entire subject of bone transplantation, Sarria classifies the indications for the operation as follows:

bacteria of typhus, malaria, and influenza. The former require early surgical intervention whereas the latter at times may be treated by internal medication. Spontaneous cure may occur but in some cases such a cure may be only apparent. Typhoid bacilli or pneumococci may become encapsulated in a nodule and remain dormant for years. Eventually suppuration may break through and lead to the formation of a fistula. Rupture into the esophagus, trachea, or mediastinum is dangerous and often fatal.

PLEUZ (Z).

Mayo, C. H.: Adenoma with Hyperthyroidism. *Ann. Surg.*, 1920, lxxii, 134.

The report from the Surgeon General's Office on the physical condition of the first million draft recruits made us appreciate that we have actual goiter regions in America. Goiter is most prevalent in the northwest states and next most prevalent in the Great Lakes region. In some of the southern states and in the New England states it is rare.

The condition shown by Plummer to be adenoma with hyperthyroidism has been described in foreign clinics as atypical exophthalmic goiter and the cases subdivided by various authorities into more or less ill-defined groups designated as cases of secondary morbus Basedow (Gautier and Buschan), formes frustes or incomplete goiter (Marie), goiter heart (Kraus, Gittermann and Stern), sympathicotonic and vagotonic goiter (Eppinger and Hess), goitre basedowidé (Marie), and Basedowized goiter (Kocher). These groups include psychoneurosis, early exophthalmic goiter, and hyperthyroidism from adenoma.

The essential points in the clinical differentiation of exophthalmic goiter and adenoma with hyperthyroidism as presented by Plummer in 1913 are:

1. The difference in the average ages of the patients when the goiter was first noticed. Enlargement of the thyroid was noted from five to ten years earlier in life by the patients with non-hyperplastic goiter than by those with hyperplastic (exophthalmic) goiter.

2. The time elapsing between the appearance of the goiter and the onset of the symptoms of hyperthyroidism. In cases of exophthalmic goiter the symptoms of hyperthyroidism followed the appearance of the goiter.

exophthalmic goiter contrasted with its absence in cases of non-hyperplastic adenomata with hyperthyroidism.

...ths of the
age of 50
goiter, and
within two years in 87 per cent. Exophthalmos even of questionable degree was rarely noted in cases of non-hyperplastic adenoma with hyperthyroidism. Such cases average from 17 to 20 per cent of the

cases ordinarily classified as exophthalmic goiter. The condition is a distinct disease entity and should have its own classification.

Toxic adenoma is now called "adenoma with hyperthyroidism," having been classed with simple goiter since 1911 when Plummer discussed the condition at the meeting of the American Medical Association.

Up to January, 1920, the surgeons of the Mayo Clinic performed 9,613 operations for simple goiter, including thyrotoxic adenomata, and 10,135 operations for exophthalmic goiter. Previous to 1912 thyrotoxic adenomata were included with exophthalmic goiter. Many of the patients with exophthalmic goiter were subjected to more than one operation, such as ligation, before resection. Thyroid adenoma with hyperthyroidism is a disease associated with adenoma which is characterized by an increased metabolic rate and excited by an excess of the normal thyroid hormone in the tissues. It is clinically evidenced by nervousness, tremor, tachycardia, etc. The symptoms appear gradually and insidiously, usually becoming definitely worse about one year before the patient appears at the clinic. Later symptoms are an increase in nervousness and mental instability, moderate tremor, loss of strength, and dyspnoea on exertion; the heart beats rapidly and hard but the beat is not so accentuated as in

accompanied by myocardial disintegration which is shown by irregular rhythm due to the premature contractions or auricular fibrillations. Exophthalmos and gastro-intestinal crises, noted in exophthalmic goiter, are absent.

The average age of the patients with adenoma with hyperthyroidism at the time of the examination was 47.7 and 47.4 per cent were of thyrotoxic

adenomata a goiter is present eighteen to nineteen years before the patient comes for operation and the symptoms of hyperthyroidism have been present about three and one-half years, twice as long as even the enlarged gland has been noticed in cases of exophthalmic goiter.

Frazier, G. H.: The Management of Toxic Goiter from the Surgical Point of View. *Ann. Surg.*, 1920, lxxii, 155.

The author's mortality in resection for toxic goiter during the past five years was only 1 per cent and a fraction. This article is based upon a series of 330 cases.

The adrenalin test has been found of very little aid as negative reactions occurred even when a typical exophthalmic syndrome was presented. The determination of the degree of toxicity is one

skin reaction is minimized, but the deeply penetrating rays are allowed to act upon the thyroid tissue.

Advanced cases with severe goiter symptoms the author treats in a hospital with relatively heavy doses, while the less severe cases he treats in the office with smaller dosage. The first course of treatment is usually the heaviest, the dosage varying between 150 and 360 milligram hours according to the severity of the disease. Subsequent treatments range from 50 to 150 milligram hours, depending

there is a gain in weight and strength, and the psychic state is considerably improved.

The results obtained with the X-ray and radium are about the same, but radium therapy has the following advantages: (1) the absolutely constant emission of the rays makes possible exact dosage; (2) the penetration of the tissues is much greater; (3) no noisy exciting apparatus is necessary; and (4) the application may be made easily.

Aikins reports three groups of cases treated. The first included cases of the mild toxic goiter of adolescence, the patients being young girls about 15 years of age. The doses of radium used varied between 464 and 753 milligram hours. In almost every case there was marked general improvement, the weight and strength increased, the gland diminished in size, and the goiter symptoms were greatly relieved.

The second group included cases of enlarged glands with grave symptoms of toxic goiter. These patients, whose ages varied from 19 to 55, presented the usual history and clinical picture of toxic goiter. From 650 to 1100 milligram hours of radium were given. In every instance there was marked improvement: the pulse dropped from between 125 and 140 to between 70 and 90; the tremor diminished or dis-

appeared. The third group included cases of little or no enlargement of the thyroid gland. The results obtained in this group were as gratifying as those secured in the second. W. L. BROWN.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Lee, B. J., and Adair, F.: Traumatic Fat Necrosis of the Female Breast. *Ann. Surg.*, 1920, LXXII, 188

Lee and Adair report two cases of fat necrosis, giving the clinical, operative, and pathologic findings.

In the other case there were two abnormal areas, one of necrotic fat, the other cicatricial in appearance but fairly well encapsulated and without the opaque texture and chalky points and streaks of carcinoma.

Both patients gave a definite history of trauma. The breasts increased rapidly in size and exhibited the same skin adherence seen in malignancy. The consistency of the tumors resembled that of carcinoma. Neither patient experienced any pain. In one case there was definite fixation of the tumor to the underlying muscles.

The diagnosis may be made from the gross appearance of the tumor. HENRY J. VANDEN BERG.

Jackson, J. N.: The Technique in Operations for Cancer of the Breast. *Ann. Surg.*, 1920, LXXII, 181.

All infected tissue must be removed within the

cells must be prevented.

A wide area of skin, the entire mammary gland, and the pectoral muscles, with the exception of the

clavicular portion of the pectoralis major, must be removed as well as all lymph-bearing structures in

American surgeons remove the fascia of the rectus as advocated by Handley.

In order to prevent dissemination, the radical operation is begun in the axilla, the lymph vessels being divided at their highest point before the breast is handled. The lymph vessels leading to the thorax are also divided early in the operation.

To prevent contamination the author covers the flaps with hot gauze pads and, before suturing, irrigates the wound with a stream of water and mops it lightly with gauze.

The preservation of the function of the arm after operation is important. The author describes his two methods of incising. He obliterates the axillary fossa by bringing the skin from the under side of the pectoralis major to the axilla, thus forming a T-shaped wound. The wound is made at a right angle, and early passive motion is instituted. HENRY J. VANDEN BERG.

Meyer, W.: Late Results after Radical Operation for Cancer of the Breast. *Ann. Surg.*, 1920, LXXII, 177.

The author reports the cases of six patients who are alive and well from twelve to twenty-five and one-half years after operation for cancer of the breast, and of four others who remained free from recurrence for four, six, eight, and sixteen years and then

tion. If the abscess was found to point toward the abdominal cavity, it was opened and drained through an abdominal incision. The prognosis of these cases was invariably grave.

The results in the second group of cases are summarized as follows:

Peritonitis developed in some cases because of devitalization of the bowel wall or leakage due to a dysenteric ulcer. Suture of the devitalized bowel wall proved to be very unsatisfactory and in most instances it was necessary to be content with drainage and hope for the formation of a fecal fistula.

The differentiation between appendicitis and a typical dysenteric ulcer of the appendix is very difficult. Operation was performed in all cases in which there was pain in the right iliac region associated with symptoms of appendix trouble.

Parotitis is probably due to direct infection from the mouth along Stenson's duct. Many of the cases of this condition were relieved by increasing the flow of saliva, but when suppuration was present it was deemed advisable to make an incision below the angle of the jaw and evacuate the pus.

Arthritis should not be confused with the joint symptoms arising from the injection of anti-dysenteric serum. In the cases reported the joint most commonly affected was the knee joint. In a few instances the wrist and shoulder were involved. No treatment was given, however, as the inflammation gradually subsided as the patient regained strength.

In most cases of perinephritic abscess incision and drainage proved to be the most satisfactory procedure. When the operation was performed early improvement was rapid.

The rectal complications of dysentery included hemorrhoids, prolapse of the rectum, and carcinoma. These were treated successfully by the routine surgical measures. HAROLD K. BECO.

Lawrence, C. H.: *Observations upon Ductless-Gland Therapy.* Boston M. & S. J., 1920, CLXXIII, 169.

The author emphasizes the various symptoms and syndromes found with dysfunction of each of the endocrine glands and states that it is most important to determine which gland is not functioning properly. Also of paramount importance, if results are to be expected from treatment, is early treatment of the disease and this depends chiefly on a well taken history.

The patient with slight malfunction of the thyroid complains of symptoms which are referable to disorder of the nervous system primarily. Such symptoms are associated also with disturbances of other glands, but in such cases do not occupy so prominent a position in the picture. A history of the character indicated accuses the thyroid gland. An increase in the basophilic in the blood, a pathologic response to the Goetsch test, and an abnormal basal metabolism make suspicion a certainty.

Contrasted with the neurological tinge which dysfunction of the thyroid gives to the history,

fatigue, loss of muscular power, circulatory disturbances and the like, but the altered nervous and psychic reactions are not present in any striking degree. Laboratory tests often disclose anemia and hypoglycemia.

In ovarian dysfunction the influence of the gland upon the blood flow suggests that its most dominant activity (if its influence on sex characteristics is excepted) is related to the circulation. The phenomenon of catamenia is the most striking evidence of normal ovarian activity, and the symptoms caused by abnormal activity logically express themselves in disturbances of the circulation. Flushing, headache, variable blood pressure, or similar evidences of unstable circulatory equilibrium are the most common and the most important symptoms.

Disorders of the pituitary body cause a most complex picture since the structure is really two glands with separate functions. There may be over or under-activity of either part separately, or both parts together, or over-activity of one lobe and simultaneous under-activity of the other. In cases of early pituitary dysfunction the symp-

toms

Lawrence cites a case of dysfunction of the pituitary gland in which the prominent symptoms were those of a disturbance of the metabolic processes, rapid growth at about the age of 16, an abnormal desire for sleep, and under-weight. The patient was given whole pituitary substance by mouth and gained 17 lb. in weight. The metabolic disturbances then ceased completely as long as she continued taking the glandular substance.

The selection of the proper glandular preparation is probably the most important point in the treatment of endocrine derangements, but there are other factors which, if neglected, will postpone or vitiate the results. Most of these early glandular derange-

ment—sufficient to give results. If a small dose is tried first, and the patient is watched closely, serious untoward effects are not apt to follow. If adequate amounts of the preparation produce no results, there are two courses to pursue: first, it must be

MISCELLANEOUS

Foot, N. C.: Report on a Case of Malignant Thymoma with Necropsy. *Am. J. Dis. Child.*, 1920, xx, 1.

The author reports a case of malignant thymoma in a 9-year-old child, giving the history, the physical findings, and a very complete report of the postmortem and microscopic examination. The outstanding complaint was dyspnea. The symptoms developed less than two months prior to autopsy. The laboratory findings during life were negative.

i
i
abscess.

At autopsy a huge mediastinal mass was found occupying the anterior mediastinum and the mediastinal structures. The tumor was composed

another by means of slender processes.

A very careful review of the literature is given. Few cases have been reported. Rubashow collected 75 cases up to 1911 and the author has found the records of less than a dozen since then. Of Rubashow's group of tumors 52 were described as sarcoma, 12 as carcinoma, and the rest variously.

These tumors are epithelial in origin and it is probable that they originate in the thymus.

RALPH B. BETTMAN

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Earl, G.: A Modified Inguinal Hernia Technique. *Minnesota Med.*, 1920, iii, 342.

In operations for hernia, as in perineal operations,

ing this support is to place the entire external oblique muscle underneath the cord. By this procedure the lowest and weakest portion of the

Torek's technique of separating the vessels and sac and keeping them apart is the best method of handling the internal ring.

In the author's method the cord is placed completely over the external oblique and covered only by the superficial fascia and skin. It is then less apt to become strangulated.

Earl has performed the operation described in 42 cases over a period of two years. While this period may be too short to warrant definite conclusions as to the end-results, none of 38 patients who have reported back has had a recurrence or complained of pain from the decreased covering.

MARCUS H. HOFART.

Denzer, B.: A New Method of Diagnosis of Peritonitis in Infancy and Childhood; Preliminary Report. *Am. J. Dis. Child.*, 1920, xx, 113

Denzer describes a technique for obtaining peritoneal fluid for diagnostic purposes. He emphasizes the disadvantages of aspiration and states that because of its many drawbacks the method has fallen into disuse.

The procedure finally adopted by the author was suggested by the classical Pfeiffer experiment in which a capillary tube was inserted into the peritoneal cavity of a guinea pig and fluid obtained by capillary attraction. The needles used were glass

needles prepared from glass tubing $\frac{1}{8}$ in. thick, with a bore of about $\frac{1}{16}$ in., which was drawn to a point and beveled. In order to add siphonage to the force of capillary attraction and thereby obtain a larger amount of fluid, a bulb was blown and the tubing was bent.

The procedure is as follows.

The skin of the abdomen is swabbed with iodine and the usual precautions are taken to determine whether the bladder is distended. The skin is then punctured in the midline about $\frac{1}{4}$ in. below the umbilicus with a No. 17 gage steel needle. The glass needle is inserted through this opening and then, held almost perpendicular to the surface of the skin, is firmly pushed inward until the sudden release of pressure indicates that it has entered the peritoneal cavity. By making the pressure parallel to the long axis of the needle the chance of breaking the needle is decreased.

In a small series of normal children, or rather, children not suffering from peritoneal exudation, fluid was obtained in only one case. In two cases of ascites puncture demonstrated the presence of fluid before a clinical diagnosis of excessive fluid could be established. In one case 0.5 ccm. was withdrawn. In the only case of peritonitis in which the author had the opportunity to try this procedure, purulent fluid was obtained. The amount was ample for culture; smears showed great numbers of gram-positive cocci in chains.

abdominal exudates.

Glass needles have distinct advantages. The capillary attraction of glass is far greater than that

glass in the hope of combining the advantages of both materials.

A. R. HOLENDER.

effect coagulation. Advancing further, he states that the activated calcium may be regarded as a catalyzer and that this conception does not conflict with the older enzymic theory of coagulation.

In verifying and applying this hypothesis to clinical states Bloch has evolved and briefly described a method for revealing experimental and pathological variations of coagulability of much broader usefulness than the older methods. It allows also a most exact study of the qualities of the coagulation.

Bloch has been able to show that sudden profuse

hemorrhage only hypercoagulability is present as a rule.

Coagulability has been found decreased in affections of the liver associated with marked hepatic insufficiency, in lesions of the kidney such as Bright's disease, in cardiac affections, mechanical pulmonary congestion, influenza, typhoid, miliary tuberculosis, and certain polyglandular and endocrinous disturbances. In this connection it has been

Disturbances of coagulation, however, must not be regarded as the sole pathology in cases presenting the hemorrhagic diathesis. Attention is called to the fact that an endotheliovascular insufficiency or dystrophy may be present and must be considered.

By recognition of these two factors, nice distinctions may be made between the various types of purpuras and thromboses and true hemophilia may be distinguished from hemophilic states.

H. W. BACHMAN.

BLOOD AND LYMPH VESSELS

Haeller, J.: The Surgical Treatment of Popliteal Aneurisms (Zur chirurgischen Behandlung der Aneurysmen der Arteria poplitea) *Deutsche Zeitschr. f. Chir.*, 1920, cliv, 169.

advisable to attempt to secure the

to escape and severe pressure is avoided vessel

suture is the operation of choice.

Early surgical treatment is advised by many as

vessel suture can be performed even in an infected

area. If urgency does not demand it, however, the

author believes that operation should be performed

during the fourth or fifth week when the field is clean and the collateral circulation has become established. Various methods to determine this are described. Compression of the sac for a few weeks prior to the operation is advisable if the dilation is a distinctly arterial aneurism. In arteriovenous aneurism the central ends of both vessels are dilated so that the development of collateral circulation is favored. In such cases the condition

to a gunshot injury and one of arteriosclerotic

aneurism. Ligation was performed twice and vessel

suture once. A cure was obtained in every instance.

J. WINSTON (Z).

SURGICAL DIAGNOSIS PATHOLOGY AND THERAPEUTICS

Glass, F.: The Treatment of Syphilis

The excellent results obtained with injections of

turpentine reported by Klingmueller have been

corroborated by the author in a number of skin

cases. The method of Wederhake (turpentine-

iodoform-glycerine and 5 per cent tannin solution)

proved impracticable for the one-hour clinic.

In the beginning, all other treatment having been

stopped, tuberculous patients were given twice a

week injections into the gluteal region of 1 ccm. of

a solution of turpentine in olive oil (2:0:20:0).

These injections stopped

ever, definite improvement was observed in a series

of cases.

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cases at least 60 injections were given, and 1 patient

received 88. The report is based upon 23 cases

which have been re-examined. GUEMBEL (Z).

EXPERIMENTAL SURGERY AND SURGICAL ANATOMY

Swartz, E. O.: A New Culture Method for the Gonococcus; Report of Experimental Studies *J. Urol.*, 1920, lv, 325.

The author has found that the presence of reduced oxygen tension is essential for the profuse growth of the gonococcus. A reduction of 10 per cent of normal atmospheric pressure is sufficient. Moisture also is essential.

The most luxuriant growth is obtained in media rich in human protein.

worse. In such instances hæmorrhage may reappear and subphrenic abscesses and cancerous degeneration may develop.

Of the direct methods Balfour's procedure has a mortality of 1 per cent and results in a cure in 85 per cent of the cases and improvement in 12 per cent. In 2 per cent it is without effect. Saddle excision has a high mortality varying from 10 to 11 per cent. This operation is more difficult and does not overcome the spasms. Transverse resection has a high mortality of 12.5 per cent in Germany although in America the improbable percentage of 2.5 is reported.

The roentgen-ray examination shows that after excision the stomach is spiral shaped but functions painlessly. The transverse excision leaves an hour-glass stomach but gives very good functional and clinical results.

The choice of operation depends upon the stage of the condition. In the first stage, when only a small "star" can be seen in the mucosa, the author regards thermocauterization as the only logical procedure. It has the disadvantage, however, that it does not cure the spasms and therefore must be followed by a gastro-enterostomy. This combination gives the best results in every way. In the second stage of callous or penetrating ulcer the saddle-formed excision by transverse resection is to be considered. In the third stage, the stage in which the ulcer is very extensive, the direct complications may be prevented by a gastro-enterostomy. The best solution of the problem is to operate in two stages, performing first a gastro-enterostomy and then a resection several months later when the patient's condition allows it. HELLER (2).

Bing, H. I.: Polycythæmia in Ulcer Near the Pylorus (Polyglobulie dei Ulcus juxta-pyloricus). *Ugesk. f. Læger*, 1920, lxxvii, 337.

Friedman was one of the first to call attention to the presence of polycythæmia in cases of gastric ulcer. The author investigated this finding and discovered an increased number of red cells in the first case he examined. Friedman's explanation that the increase of adrenalin in the blood is correlated with ulcer and polycythæmia is discarded by Bing as "too ingenious."

of gastric ulcer in which improvement followed regulation of the diet it was found also that the red cell count had been considerably decreased. Further investigation demonstrated the fact that in spite of the high red cell count the nitrogen of the serum remained normal. Moreover, the quantity of urine excreted was increased relatively so that dehydration was out of the question. In Bing's opinion it seems probable that the body undergoes a loss of salts as the result of a decrease in the chlorides, and that the decrease in the water content is due to this change. The latter is necessary

if the normal concentration of the blood is to be maintained.

The chlorides contained in the stomach are not inconsiderable in amount. In the blood the chlorides are distributed in different proportions in the plasma and the corpuscles. An increase in the carbon dioxide is associated with an increase in the chlorides in the blood. Moreover, as it has been established that the plasma contains more sodium chloride than the corpuscles, it follows that the blood contains much sodium chloride in polycythæmia and little in anæmia.

To calculate the normal chlorides the following formula is of value: $b = 29.50 \cdot c$. In this formula b represents the number of blood corpuscles, and c , the chlorides. SÄXINGER (2).

Hey, R.: "Ueber Deutscher"

Pneumatosis cystoides is characterized by the formation of multiple air cysts in the intestinal wall and occasionally also in other parts of the body. The condition may occur at any age except extreme youth, but is most common in middle-aged males.

Including the author's case, 66 cases have been reported. In 10 instances pneumatosis cystoides was the only condition found. In the other cases conditions such as pyloric stenosis secondary to ulcer or carcinoma (66.5 per cent), peritoneal or pulmonary tuberculosis, myocardial insufficiency, appendicitis, and ileus co-existed. The usual site of the disease is in the wall of the lower part of the ileum. The large intestine, the stomach, the peritoneum, the mesentery, and the omentum also have been found involved.

As a rule the condition is localized to one small area of the intestine. Von Hahn and Demmer, however, have reported a case in which both the large and small intestines were attacked. The size of the individual cysts varies from that of a pin to that of a walnut. In 1 case a single cyst the size of a fist was discovered. The walls of the cysts are translucent. On microscopic examination multiple round or oval air spaces are found in the subserosa or submucosa. The cyst walls are formed by connective tissue lined with epithelium. Occasionally giant cells are present. Signs of inflammatory reaction are usually absent. The cysts contain a mixture of oxygen and nitrogen gas. In 3 cases carbon dioxide, and in 1 case hydrogen, was found.

In regard to the etiology two theories have been advanced, one attributing the condition to infection and one tracing it to mechanical causes. Some of the authors reporting cases have found short rods which they claim are the responsible agents. The theory attributing the cyst formation to mechanical factors is based on the fact that often in lesions of the intestinal wall, such as those of tuberculosis, and primary appendicitis, small defects in the mucosa are formed. It is possible also that an atrophic change and hypersensibility of the in-

excises the ulcer and surrounding area of induration with a wide margin out and down to healthy tissue.

The affected tissues are of extreme hardness and the subcutaneous fat may be completely destroyed. In deep burns the muscle may be entirely replaced by dense scar tissue, or there may be varying degrees of infiltration with scar.

The bleeding is always marked after excision, and usually difficult to check. After excision the defect should be grafted immediately if the base of the wound is of normal tissue, but if doubtful tissue is left, grafting should be deferred until granulations form. The type of graft must depend upon the

supplying the area

The writer has seen no benefit following the use of radium or the X-ray in the treatment of X-ray burns.

Patches of keratosis on the X-ray operator's hands may be successfully treated by freezing with carbon dioxide ice. Radium also may be used, but is less safe. If the patches ulcerate, complete excision with immediate or subsequent grafting is the method of choice.

Boggs, R. H.: Lethal and Erythema Dosage of Radium in Malignancy. *Am. J. Roentgenol.*, 1920, n.s. vii, 398

In the treatment of malignancy the radiologist

To some it means a dose which causes no visible

differently in different parts of the body. The dosage can be measured accurately only by the electroscope and the use of this apparatus is not

been paid to the difference between the erythema

Rodent ulcer or basal-cell epithelioma and lympho-

sarcoma are much more easily destroyed than other types of malignant growths. The lethal dose for other types of cancerous growths is from six to seven times greater.

In tumors which do not respond readily to radiation there is more necrosis and less absorption when a lethal dose is given. Thus when sarcoma of the tonsil is treated the growth may disappear before much necrosis develops, whereas, in fibrosarcoma or chondrosarcoma, considerable necrosis may occur before any great amount of absorption takes place.

In infected superficial epidermoid growths the reaction to radium may not be so favorable because the radium inflammation produces oedema of the tissues and may spread the infection. This fact accounts for many radium failures and the belief of some radiologists that infection of a lesion contraindicates the use of radium.

Metastases in the lymphatic glands cannot be destroyed by an erythema dose. Some radiologists have made the mistake of considering normal cells seven or eight times more resistant than certain cancer cells and more than four times as resistant as the squamous type of cell. This assumption is based on confusion of the erythema dose with the lethal dose and will lead to poor results.

All tissue, whether normal or diseased, is affected by radium and reacts specifically. The lethal dose differs for different types of malignant cells and its determination is further complicated when the growth is situated beneath the skin. Glandular tissue is readily destroyed by the rays. More rays are required to overcome extensive involvement of the lymph glands than involvement of the small glands of the skin, and to destroy hair follicles than to produce a temporary epilation. The submaxillary glands are more resistant than the other glands of the neck. Some involved lymph glands subside readily while others do not. This difference is due probably to malignant and inflammatory processes. Metastatic glands with a large amount of malignant tissue respond to a greater degree than those composed largely of fibrous tissue.

Simple, inflamed, and enlarged glands, Hodg-

Carcinomatous glands require large doses to destroy all the cancer cells. Smaller doses may cause the glands to become quiescent and undergo fibrous degeneration, but the condition is apt to become active again.

The lethal dose of radium is slightly less than that of the roentgen ray. The dose given should always be the lethal dose. Smaller doses, however, cause degeneration of the malignant cells so that fibrous

picture is therefore that of a chronic ileus which appears at first to be benefited by enemas, etc., but in reality becomes progressively worse and leads to complete intestinal obstruction.

In most cases there is a fever varying from 38 to 38 degrees C. On rectal examination the true pelvis is found to be filled with hard, unyielding exudate and with the palpating finger the intestinal opening is felt to disappear in the mass like a tunnel. The abdomen is inflated and sensitive.

Treatment must be directed to overcoming the intestinal obstruction. This must be done by as conservative measures as possible as usually the patient is in very poor condition. Under local anesthesia the author makes an incision in the abdominal wall, separates the abdominal muscles bluntly in the direction of the fibers, and sutures a portion of the descending colon to the peritoneum. He then places a layer of iodoform gauze over the peritoneal edge and punctures the intestine so that the gas may escape. On the following day he makes a transverse incision 1 cm. in length. After two or three days the intestinal wall in the area of exudate decreases in thickness and the intestine is again permeable. Because of the absence of peristalsis the conservative therapeutic measures which formerly were without effect are now of great benefit. After ten or twelve days the serious clinical picture has disappeared and the intestinal fistula, which is no longer necessary, may be allowed to close quickly.

The author gives the histories of 4 cases of the condition described which illustrate the favorable results obtained from the treatment advocated.

SMON (Z).

Wood, W. O.: Resection of the Colon by the Three-Stage Method. *Edinburgh M. J.*, 1920, n.s. xxv, 106

Resection of the large intestine followed by immediate anastomosis is an operation the mortality of which is considerable, even when it is undertaken under the most favorable conditions. The semi-solid contents of the colon are apt to become arrested at the site of the union where they exert injurious pressure on the sutures with resulting ulceration and cutting out of the stitches. When obstruction has been present in the large intestine previous to the operation, this course of events is almost certain. The walls of the intestine above the obstruction are thick, congested, and sodden, and sutures will almost invariably cut out of such unhealthy tissue.

In deciding on the operative treatment in cases of acute obstruction of the large intestine a choice may be made from three procedures:

1. The operation may be limited in the first instance to the caecostomy, laparotomy, as a rule a malignant tumor.

2. In a few cases, when the obstruction is of minor degree, an anastomosis may be performed between

the ileum and the colon below the tumor, the underlying cause being dealt with later

3. A two-stage or a three-stage operation after the method of Paul and Mikulicz may be carried out.

The technique of the three-stage operation is as follows:

The first stage consists in bringing the loop of the bowel containing the tumor or other pathologic

tubing attached is then tied in above the tumor to overcome the obstruction. The second stage, which is carried out about a week later, consists in the removal of the loop of bowel with the attached mesentery, at the base of the loop, almost flush with the abdominal wall. A Paul's tube is then tied into each divided end of the intestine to prevent hem-

septum between the two ends of the bowel.

In acute obstruction of the large intestine colotomy by the three-stage method is often the wisest procedure and may be quite satisfactory in its ultimate results even though the patient's condition is serious by reason of toxic absorption. Also

of a severe operation, this method has much to recommend it as it is followed by practically no post-operative shock.

HOWARD A. MCKNIGHT.

Axtell, W. H.: Appendicitis, Hernia, and Anorectal Diseases of the Young Soldier. *Am. J. Surg.*, 1920, xxxiv, 215.

The author states that an astonishing number of physically and mentally defective youths were accepted for army service who should have been rejected. Having been accepted, they almost immediately became expensive wards of the government and many of them will remain wards of the government for the rest of their lives. In Axtell's opinion the defects in these cases may be traced back to birth and their persistence was due to the fact that no systematic program had been carried out for the child's physical development. The prevalence of such defects became more evident when the men were segregated at mobilization camps in great numbers.

Axtell found also an astonishing number of intestinal and anorectal diseases such as were hardly to be expected in young men. Men with these conditions and those who were poorly nourished or poorly developed early became victims of military training. The failure of reparative measures may be attributed to the non-resisting and non-vigorous tissue due to the lack of physical training so essential to vigorous manhood.

GYNECOLOGY

UTERUS

Heineberg, A.: Uterine Curettage. *Therap. Gaz.*, 1920, n. s. xxxvi, 538

The author states that the purpose of this article is to set forth the evils of one of the commonest medical practices, curettage of the uterus. The

cycle, and explains the various pathologic reports which may be obtained if due regard is not paid to the date of the last menstruation.

The conditions for which curettage is done may be divided into two groups. The first includes dysmenorrhœa, acute antelexion, sterility, and leucorrhœa; the second, menorrhagia, metrorrhagia, and purulent or putrid discharge.

Dysmenorrhœa and antelexion, if relieved at all, are benefited by the dilatation rather than by the curettage. Sterility is due as a rule, not to changes in the endometrium, but to other causes, such as infantile uterus, closed tubes, chronic cervicitis, or some condition in the husband. Kelly has shown that less than 15 per cent of sterile women conceive after curettage. Leucorrhœa is practically always due to disease of the cervix and may be treated without exploring the body of the uterus and subjecting the patient to the danger of infection.

The dangers of curettage in the second group of conditions—conditions due to ovarian hyperfunction, infection, or the retention of the products of conception—have already been so thoroughly discussed that little excuse for the operation remains.

As shown by Polak, the use of the curette is indicated only for the removal of the products of conception before the eighth week and for diagnostic purposes in cases of intermenstrual bleeding at, near, or after the menopause. In all other instances it is not indicated, it is of no value, and it may cause serious injury.

SIOKEY A. CHALFANT.

Casler, D. B.: A Unique, Diffuse, Uterine Tumor, Really an Adenomyoma, with Stroma But No Glands; Menstruation after Complete Hysterectomy Due to Uterine Mucosa in the Remaining Ovary. *Surg., Gynec. & Obst.*, 1920, xxxi, 150

The tumor in the author's case differed from the usual adenomyoma in the fact that it was characterized by an almost total absence of glands in the mucosa, while in the walls of the uterus itself there were no glands whatever, but everywhere large, broad masses of interglandular stroma which infiltrated between the muscle columns and divided

the muscle tissue into a coarse meshwork as far as the peritoneal surface.

Casler describes also a second tumor of the ovary removed at a later operation. This tumor, which he

structures were seen

For four years following the panhysterectomy for the removal of the first tumor the patient menstruated for a part of one day at regular monthly intervals. Death occurred following the second operation.

CARL H. DAVIS

Schmitz, H.: Observations on the Technique and Indications of Radium Therapy in Uterine Carcinoma. *Surg., Gynec. & Obst.*, 1920, xxxi, 177

There are nearly as many methods of employing radium as there are clinicians using it. The author has tested out the various procedures in his clinic during the past six years, has evolved a safe and efficient technique, and has reached the conclusion that a radium capsule placed in the cervical canal will disperse the rays evenly through the pelvic cavity.

Schmitz insists on the insertion of a retention catheter in the bladder and the flushing of the bowels with castor oil and enemas immediately before the treatment is begun.

painful cicatricial formation causing stricture of the rectum, vagina, and ureters, and a systemic reaction which may lead to toxemia and death.

and 1.75 cm. in length. Two such capsules are then placed in a brass filter which has walls 0.7 mm. thick and is surrounded by rubber tubing 3 mm. thick. The radium is left in the canal for ten hours and the dose then repeated after from twelve to fourteen hours each day for seven days.

In some cases it is necessary to drain the uterine cavity with a soft rubber T-drain for several weeks.

Three to four weeks after treatment a visible and palpable decrease in the cancer area will be noted.

The author divides his cases into five classes: (1) cases which a physical examination demon-

it, or if wide drainage be indicated, the sphincters need be only loosely approximated, in which case the perfect mucous tube will keep the mucosa from overlapping or growing between the sphincter ends, which is one of the frequent causes of failure of sphincter repair.

"Next, the external sphincter and the inner portion of the perineum may be united. Non-absorbable tension sutures should be used externally. The outer part of the perineal incision, the original site of the sinus, should be left open to a degree indicated by drainage requirements. Next, the mucous tube is pulled down, folded in order to get a good bite with the needle, and sutured to the skin. There should be little tension on this mucosa; it should be united to the skin by as few stitches as are required to hold it, in order that good drainage may be afforded the submucous space.

"This mere technique discloses and drains some blind submucous fistulous extensions which are overlooked and undrained by present methods of operating. Redundancy of the mucous membrane will rapidly disappear or, if desired, it may be trimmed off when union is complete in its new position in the anal canal. The object of the whole procedure is thus seen to be the transformation of the original pathology into a blind, external fistula."

This detailed procedure is clearly illustrated with drawings and photographs. The author gives a short history of the method and mentions the slight modifications which have been suggested by other workers.

A. R. HOLLENDER

LIVER, GALL-BLADDER, PANCREAS, AND SPLEEN

Rous, P., and Larimore, L. D.: The Biliary Factor in Liver Lesions. *J. Exper. Med.*, 1920, xxxi, 249.

The term "biliary" has long been applied to a

walls. The actual part played by bile in the production of the connective-tissue changes seen in such cases and of chronic lesions in the human liver in general is not definitely known. According to some authors human bile is incapable of permanently injuring the liver, but there is positive evidence that in some cases it has been the cause of severe hepatic damage.

For the purposes of the investigation here reported the authors assumed that human bile, while innocuous as compared with the bile of certain other species, sometimes produces liver injury. Their object was to obtain through experiment a better understanding of "biliary lesions" with special reference to the part played by bile in their causation. No attempt was made to ignore the factor of infection.

Rabbits were used in the experiments as in this animal it is possible to obtain results uncomplicated by infection or intercurrent cirrhosis.

Ligation of the common duct of the rabbit resulted in a mixed lesion from injury throughout the entire length of the bile channels. When single ducts were obstructed and the portal stream altered, cirrheses of pure monolobular and diffusely intralobular types were produced. The character of the connective-tissue changes was determined by the path of escape of the bile from the collecting system. This was conditional to a great extent upon the secretory activity, which in turn was dependent upon the blood flow. The portal flow was largely diverted from regions of local stasis through encroachment on the stream bed by the dilated ducts.

It was found that there was a large margin of safety in bile elimination by the normal hepatic tissue. Less than a quarter of the liver of the rabbit—and this deprived of its entire portal stream—sufficed to keep the organism healthy and free from clinical jaundice when the ducts of the remainder of the liver, which received all of the portal blood, were ligated. The vicarious elimination thus illustrated was of great importance for regions of local stasis as it kept the blood relatively free from bile, thus preventing resecretion into such regions and facilitating exchange from them into the body fluids.

The experimental monolobular and intralobular cirrheses were the result of the limitation of biliary lesions to special levels of the duct system. Their resemblance to the various forms of "biliary" cirrhosis referred to as "Hanot's cirrhosis" was close, and in the authors' opinion the diverse liver lesions of Hanot's disease may be readily explained by the assumption that the stasis, with or without infection, which was indubitably present, had its situation at different levels in different cases. There were reasons for the view that bile stasis *per se* was sometimes a prime cause of the malady. Certainly such stasis complicated many chronic liver lesions.

GEORGE E. BEILEY.

Finsterer, H.: The Diagnosis and Treatment of Liver Injuries (Zur Diagnose und Therapie der Leberverletzungen). *Beitr. z. klin. Chir.*, 1920, cxiv, 598.

Finsterer reports 15 cases of liver injuries, 12 of them subcutaneous ruptures and 3 gunshot wounds. In 12 of them there was a slowing of the pulse which the author regards as a definite and constant symptom of liver injuries. To demonstrate it the determination of the pulse rate must be begun soon after the injury and continued for some time because finally, as the anemia increases, a quickening of the pulse sets in. In 3 of the author's cases, which were not observed sufficiently because they entered the hospital late, no bradycardia was noticed.

Finsterer attributes the bradycardia to the bile acids and has proved the truth of this assumption experimentally. The demonstration of a bradycardia indicating an injury to the liver is not necessarily an indication for operation, however, as this symptom occurs also in the so-called subcapsular rup-

in the anterior chamber and the transplanted ovarian tissue was still viable. Transplantation into the liver and anterior abdominal wall has also been successful. A series of experiments in fertilizing the transplants is being undertaken and, in addition, a series of experiments on intravital staining.

As the work is still incomplete only a few observations are made.

1. Ovulation is due to a specific enzyme which is similar in nature to the enzyme crepsin. Apparently there are also other proteolytic enzymes and a lipase in the liquor folliculi.

2. Atresia of the follicles is due to this proteolytic enzyme or enzymes.

3. These experiments offer a rational explanation for the use of thyroid extract and corpus luteum in sterility.

CARL H. DAVIS

MISCELLANEOUS

Chassot: Peritoneal Menstruation (Menstruation péritonéale) *Rev. méd. de la Suisse Rom.*, 1920, VI, 453.

Chassot's case of peritoneal menstruation was that of a married woman 25 years of age. The patient had an attack of appendicitis some few years before but was not operated upon. The present illness began with pains in the lower part of the abdomen on the right side. A diagnosis of chronic appendicitis was made and an operation was performed.

When the peritoneum was opened a very large quantity of fluid blood escaped. It then seemed possible that the condition was an extra-uterine pregnancy. The uterus and adnexa were examined therefore but no trace of ovum or placenta was found. The tubes were intact although they were markedly hyperæmic. A ruptured corpus luteum was found in the right ovary from which the blood

cavity which contained about 300 gm. of fresh fluid blood, and closed the abdomen. The patient

only a few cases of peritoneal hæmorrhages occurring from a menstruation, but in one such case reported the woman was almost exsanguinated when the laparotomy was performed.

Examination of the appendix in the author's case showed that there was some peri-appendicitis.

Chassot does not enter into a discussion of the causes of hyperæmia of the genital organs but states that in the case reported the patient's general blood plethora might have been the etiological factor, the hæmorrhage being of the nature of that which occurs in epistaxis. WILLIAM A. BRENNAN.

Mueller, M.: Genital Tuberculosis in the Female from the Modern Viewpoint Regarding Tuberculosis, and the Question of Ovarian Tuberculosis and Primary Abdominal Pregnancy.

Tuberculosis of the female genital organs is found in from 1 to 2 per cent of autopsies. Primary genital tuberculosis, however, is very rare, the infection being usually borne to the genitals by the blood stream or through the lymphatics from contiguous or neighboring organs. A primary genital tuberculosis develops only when immunity is not established during childhood. In such cases the course of the condition is so rapid and is associated with such marked pelvic and peritoneal symptoms that its true nature is obscured.

In the female genital organs three types of tuberculosis are found, a military, a fibrous or interstitial, and an ulcerating type. When the tubes are involved a marked exudative, catarrhal inflammation may be set up. In such cases the pathologic changes may be very minute and the number of bacilli very large. There is both an acute and a chronic form of tubal tuberculosis. In the acute form the mucosa is early destroyed, the wall of the tube becomes thickened, and the abdominal end of the tube remains open until the extruded bacilli set up a local peritonitis which closes it. The chronic form closes the abdominal ostium early and causes the formation of a pyosalpinx with seropurulent or thin cheesy fluid.

The histories of two interesting cases of genital tuberculosis are given. FRANKENHEIM (Z).

Stephan, S.: The New Treatment of Peritonitis.

1957.

The author describes the combined surgical

operation upon is exposed and the disease focus placed under cross fire. If both tubes are easily accessible only the tube most severely involved is removed and the other one is rayed. Menstruation is therefore not affected.

The treatment is given through the back and through the abdomen. In pelvic and sacral raying the side operated upon is exposed. The raying is continued to four full series, the total dosage being 4,680 X. Menstruation is not influenced even by the maximal dosage. In addition an attempt is made, apparently with success, to improve the patient's general condition with the use of the ultra-violet rays and the Solluk lamp.

Warren, R.: *The Treatment of the Diseased Gall-Bladder. Practitioner*, 1920, cv, 102.

The gall-bladder should not be removed when the difficulties of its removal are so great as to render the operation dangerous or it can be advantageously employed to drain the biliary passages. Warren regards the diseased gall-bladder very much in the same light as the diseased appendix, and believes that the correct treatment is cholecystectomy performed while the condition is still localized.

In considering the early diagnosis of gall-stones it is most important to remember that such calculi are a very fertile cause of dyspepsia, especially in stout middle-aged women. In such subjects the presence of gall-stones should be suggested by the occurrence, after meals, of pain or discomfort associated with nausea and sometimes with vomiting which does not relieve it, and with flatulence which is often "fort in t two cla

severe and spasmodic to warrant the term "colic," and jaundice, are often absent for a long period; in fact, the first evidence of severity may be an attack of acute cholecystitis with local peritonitis. The possible presence of gall-stones should be borne in mind, therefore, in the examination of patients who are supposed to be suffering from flatulent or nervous dyspepsia or some obscure form of heart attacks. If reasonable evidence of calculi is found, operation should be advised before the complications ensue which are apt to render surgical treatment more difficult and prolong convalescence.

HOWARD A. MCKNIGHT.

Krabbel, M.: *Torsion of the Neck of the Gall-Bladder (Die Stieltorsion der Gallenblase). Deutsche Zeitschr. f. Chir.*, 1920, cliv, 1, 76.

The author has observed three cases of torsion of the gall-bladder. These were cases of so-called "wandering gall-bladders," two of which were twisted about 360 degrees, and one, 180 degrees. The condition resulted in marked disturbances of nutrition.

In the literature the author has been able to find the reports of five other cases of this kind. These he gives briefly. According to Payr, the torsion is due to the fact that the veins of the neck of the gall-bladder are stretched by constant pressure of the blood and therefore become long and tortuous. When, because of a pathologic condition, this pressure is increased still further, it causes the organ to twist upon itself. As the veins are unable to untwist this torsion because of their lack of strength the majority of authors believe that other factors are involved in addition. In Krabbel's opinion the cystic duct acts in the same way as the veins when it becomes elongated by pressure.

The condition occurs only in very old persons who are decrepid and emaciated, and most often in women. At first a tumor mass the form and size of a kidney placed transversely may be palpated

at the under margin of the liver. In the later stages the symptoms of ileus and peritonitis predominate. As a result of the torsion hemorrhagic infarction of the gall-bladder occurs, then necrosis, and finally perforation.

The treatment is surgical, namely cholecystectomy. As a rule the operation is not difficult and if performed in time offers a good prognosis.

WINIWARDER (Z).

Hutchinson, H. S., and Fleming, G. B.: *The Digestion and Absorption of Fats in a Case of Congenital Atresia of the Bile Ducts. Glasgow M. J.*, 1920, n.s. xii, 65.

intestine on the digestion and absorption of fats. The results of the study of fat metabolism, which

soaps to almost the same degree as in normal conditions. The daily loss of neutral fat was only 1.87 gm. out of an intake of 19.6 gm.

2. The absorption of fat was very defective inasmuch as in this case it was about one quarter of what it should have been normally.

3. In view of the fact that at postmortem the pancreas was found to be normal and its duct patent, it is logical to conclude that the absence of bile inhibited the lipolytic action of the pancreatic secretion to only a slight extent. On the other hand, the analysis of the stools revealed a gross defect in the absorption of soaps and fatty acids and as the one abnormal factor was the absence of bile from the gut, it is reasonable to suppose that bile is a factor of importance in the absorption of fat rather than in the fat-splitting action of the pancreatic secretion.

HAROLD K. BRON.

Speed, K.: *Carcinoma of the Pancreas. Am. J. M. Sc.*, 1920, cxl, 1.

In this article the author discusses the important diagnostic symptoms and the operative methods employed in 52 cases of primary pancreatic carcinoma and tabulates the anatomical diagnoses from 12 autopsies.

The most prominent symptoms in order of frequency were as follows:

1. Cachexia. This was present in 90 per cent of the cases, and was very rapid.

2. Jaundice. Jaundice was found in 80 per cent of the cases, and in many was the condition which first alarmed the patient. It was progressive and soon presented all the symptoms of cholemia.

3. Pain. This symptom was present in 67 per cent of the cases and in many case onset of jaundice, but remained constant and frequently referred to the back.

of the peritoneum has occurred it is difficult. In the case reported the raw surface was extensive and the sigmoid short, but fortunately the cæcum was long and mobile.

Beginning at the reflection of the sigmoid from the pelvis the former was stitched by continuous suture to the left side of the pelvis over the round ligament and bladder to about the midline so that it covered all raw areas on this side. When possible

middle anteroposteriorly, and separately posteriorly to the rectum or pelvic wall. In this manner all raw areas of the pelvis were effectively closed off from the abdominal cavity.

The lower raw end of the ileum was covered with a strip of omentum $3\frac{1}{2}$ in. wide across its lower end. The abdomen was closed without drainage.

The patient left the hospital on the twentieth day in good condition. R. E. CHRISTIE

Dietrich, H. A.: The Results Obtained with Mesothorium and Radium in the Treatment of

This article is based on the results obtained in 109 cases—62 new cases, 9 cases of recurrence following operation, and 38 cases given prophylactic radiation following operation—which were treated during the period from 1913 to 1917. Whenever possible the radio-active substance was introduced into the cervix or into the tumor itself.

Of 9 cases treated by radiation alone, 55 per cent were cured. The Wertheim operation gave a cure

lasting over two years in only 25 per cent of the cases. Of 36 inoperable cases of carcinoma of the cervix, 11.1 per cent were cured. All of the cases in

inoperable improved very much at first but the end-result was poor. Three of these patients died

and 1 for more than three years. Five cases of vaginal carcinoma were fatal although at first they showed improvement. Of 6 patients with carcinoma of the vulva, 1 who had a recurrence fol-

carcinoma of the urethra 1 remained well longer than four years.

In 9 cases of recurrence following vaginal or abdominal extirpation of the uterus and in cases in which metastases of an ovarian carcinoma developed in the cervix the results were poor, the complications consisting of extensive necrosis in 1

served. There were also general systemic disturbances but these were not severe.

The author comes to the conclusion that genital carcinoma must be treated with radium early, and at least 50 mg. of the radium element must be used. The minimal dosage should be 8,000 milligram hours. For deep therapy a combination of radium and intensive X-ray treatment is essential.

W. V. SIMON (Z).

Owen, W. B.: The Treatment of Knee-Joint Infections. *Am. J. Surg.*, 1920, xxv, 202.

This article touches briefly on infections of the knee joint other than purulent arthritis resulting from trauma and reviews the important recent literature regarding the operative methods of treating arthritis of the purulent type. Willemss does an arthrotomy, leaves the wound wide open, and then begins "immediate active mobilization" in which the patient himself moves the joint by muscular effort. The author draws the following conclusions in regard to the Willemss method:

1. The Willemss method in suppurative arthritis produces free drainage of pus, promotes the circulation of synovial fluid with the maximum power of resistance, and stimulates the blood supply to the joint.

2. The practical requirements of treatment are: (1) free drainage, and (2) active movement.

3. Reports have shown that in about 50 per cent of the cases treated a useful mobile joint has been obtained.

4. The Willemss method should not be employed if delayed until the fulminating stage of suppurative arthritis has been reached.

For deformity and stiffness following any type of knee-joint infection Owens advises physiotherapy. If an infected knee joint is to be opened, cleaned out, and closed immediately, operation must be performed early and all foreign material must be removed. If drainage is necessary it must extend only to the capsule and not into the joint.

Owens usually makes an incision varying from 1½ to 2 in. in length, parallel to the inner and outer border of the patella and extending into the joint, and then thoroughly washes out the joint cavity for twenty minutes with a 1:15,000 mercuric chloride solution. He then closes the capsule and other

cm. shorter, than the corresponding bones of the other leg. At the juncture of the middle and lower thirds of the tibia was a pseudarthrosis. The X-ray showed that the cortex and spongiosa were definitely developed at the proximal end of the upper fragment but the cortex was smaller in the upper diaphysis, thicker than normal lower down, and at the site of the fracture filled the medullary cavity entirely. The distal fragment was cone-shaped with a rather pointed end. The spongiosa was apparent only in the epiphysis and the adjacent parts of the diaphysis. The larger part of it was revealed as a light homogeneous mass surrounded by a thick cortex shadow 1 cm. wide. The shadow of the lower end of the fibula was also light and indicated an interwoven structure. The structure of the astragalus seemed to be similar, but the rest of the bones of the foot approached the normal rather closely.

The insertion of a bone and periosteal flap from the upper fragment between the two ends did not overcome the pseudarthrosis. Ten weeks later the lower end of the tibia was resected and an osteoperiosteal graft made from the healthy tibia was inserted so that its upper end extended about 1 cm. into the upper fragment and its lower end into the apparently healthy astragalus. The lower fragment consisted of periosteum and a thin layer of bone which could be easily compressed and torn, and contained a bloody marrow-like fluid.

One year later a definite callus had formed at the ends of the graft, but a pseudarthrosis was again present as the graft had become loosened from the upper end. Tissue sections from the lower fragment consisted principally of interwoven fibers, fatty tissue, and hyaline cartilage. In the wall of the cyst the fibrous tissue had become changed to bone and cartilage, while near the margins it had been changed to calcium-free and calcium-containing tissue and osteoclasts.

The author states that there is a direct relationship between congenital fracture and bone cyst assuming histologically the picture of osteitis fibrosa and that congenital fractures may be due to osteitis fibrosa. GUMMEL (2)

operative treatment is extremely urgent if the joint or limb is to be saved. When joint infection is complicated by serious bone injury or injury to the femoral or popliteal artery or nerve, amputation is advisable.

LIONEL D. PRINCE.

Beust, A. T.: Osteitis Fibrosa and Bone Cyst with Congenital Fracture of the Tibia (Ostitis fibrosa und Knochenzyste bei angeborener Unterschenkel-fraktur). *Deutsche Ztschr. f. Chir.*, 1920, cli, 60.

The case reported was that of a boy 7 years old. When he was three weeks of age curvature of the left tibia above the malleoli was observed. About six months later the bone was fractured at the site of the curvature but did not heal. Suture of the bone after four weeks was unsuccessful. The leg

old a bone inlay was applied but the operation was unsuccessful. The femur was then 1 cm. longer, and the tibia 9½

Freiberg, A. H.: Injuries to the Sesamoid Bones of the Great Toe. *J. Orthop. Surg.*, 1920, n. s., 453.

A number of articles have appeared in which the significance of symptoms assigned to the region of the metatarsophalangeal joint of the great toe on its inferior aspect has been discussed. In the cases reviewed the X-ray showed for the most part that the mesial or tibial sesamoid bone was divided by a transverse cleft into two parts which in some instances were of nearly equal size and in others very unequal.

The observation has been made also that both of the sesamoid bones of the great toe are sometimes divided congenitally. In examinations of 100 clinically normal feet Geist discovered that

the blood sugar is normal except in the glycosuria of pregnancy. The urea concentration test was found to be 2 per cent of urea or more.

In the toxæmias of pregnancy the chief feature is the high diastase content. Except in pancreatic diseases, these are the only conditions in which it is found. In true toxæmia no evidence of pancreatic involvement has been demonstrated and the blood

contains albumin and casts and a diastase content below 10 units, and the blood urea is increased. The urea concentration test is of value as a means of

blood-urea estimation

Walshy's conclusions are based on twelve cases of toxæmia and fifteen cases of nephritis in pregnancy, a large number of cases with other complications and normal cases. The observations show that all convulsions are not eclamptic, some may be uræmic. In the two conditions the treatment is different. In the true toxæmic vomiting and pre-eclamptic albuminuria of pregnancy treatment along the lines of neutralizing the toxins circulating in the blood is being pursued. The diastase ferment test is a means of recognizing this condition and preventing its sequelæ. During the past eighteen months the mortality from the toxæmia and nephritis of pregnancy has fallen to nil.

MARIE R. BLOOM.

Coch.

J. Am. M. Ass., 1920, LV, 93

to be excluded are hematogenous infections of the kidney, pyelitis, ureteral obstruction, gall-bladder disease, and inflammatory affections of the appendages.

Repeated observations must be made of the pulse rate, the temperature, and the leucocyte count. Any tendency whatever on the part of the patient to refer the pain to the right iliac fossa or the elicitation of tenderness or rigidity in this region must be given special weight in view of the fact that these signs are frequently obscured by the increased size of the uterus.

When a diagnosis of appendicitis is made, operation is indicated. In some instances the operation must be exploratory in character and undertaken on the ground that in cases of severe and persistent

abdominal pain which is not relieved by the usual remedies operative investigation is the safest procedure.

As at this late period the life of the child is not endangered by terminating the pregnancy the authors believe this procedure is indicated. Cragin and Williams do not favor the emptying of the uterus from above or below in dealing with the appendix. As to whether the emptying of the uterus should be done before or after the appendix is removed the authors state that it is better to terminate the labor first and remove the appendix immediately thereafter. It is generally agreed that the removal of an appendix in the presence of a full-term uterus is usually very difficult. Furthermore, if the inser-

tive field as to cause the spread of infection to all parts of the abdomen. The maintenance of a quiescent condition, on the other hand, would allow the formation of protective adhesions and subsidence

after the operation is completed.

The method used to terminate the pregnancy must be rapid and certain. While a slowly induced labor is in progress suppurative and peritonitis may be progressing much more rapidly. If the patient is a multipara accouchement forcé may be considered if the obstetrician is sure that he can effect delivery promptly by this method. If the patient is a primipara or if there is any doubt regarding immediate delivery in the case of a multipara, cesarean section with appendectomy should be performed.

The authors are definitely opposed to the teach-

LABOR AND ITS COMPLICATIONS

Barnes, A. R.: Twilight Sleep; A Report of 30 Cases and a Summary of 5,575 Cases Reported in the Literature. *J. Indiana State M. Ass.*, 1920, XII, 239.

In the cases reported in the literature from 1/6 to 3/4 gr. of morphine was given and was not repeated. The first dose of scopolamine averaged 1/150 gr. Following this, the dosage was varied from 1/150 to 1/450 gr. according to the requirements of the particular case.

or Carrel's treatment. A careful X-ray examination should be made and any sequestra immediately removed. Successful treatment depends chiefly on the early elimination of sepsis.

As soon as the infection is localized or eradicated massage and early action should be begun. To accomplish this an apparatus which will permit motion and massage of the soft parts to promote circulation while it maintains the reduction of the fracture is necessary.

The author condemns mechanical means of

tion and the others have serviceable legs.

ROBERT V. FUNSTON.

Campbell, W.: Ununited Fractures of the Neck of the Femur. *South. M. J.*, 1920, xiii, 585.

The neck of the femur is the most frequent site of non-union. This fact has been attributed to interruption of the circulation of the nutrient artery to the head, the inhibition of callus formation by the synovial fluid, the ordinary causes of non-union such as syphilis and the interposition of muscles, and, most frequently, failure of anatomical reduction. The resultant disability is permanent and progressive.

The author divides fractures of the neck of the femur into four classes according to their anatomical location and prognosis:

1. Fractures of the base of the neck, subtrochanteric, intertrochanteric, and trochanteric. These unite readily.

2. Fractures of the neck with the upper end of the distal fragment within the acetabulum. In such cases a good functional result may be obtained without bony union.

3. Impacted fractures. Impacted fractures may be united by simple rest in bed or any form of hip support.

4. Fractures of the neck proper, i.e., "central" fractures. This is the most frequent site of non-union.

Unlike other fractures, fractures of the neck of the femur are affected by non-union if they have not united by the end of eight weeks. The term "delayed union" is not applicable to this fracture. The X-ray findings are unreliable as to the degree of firmness of union. Absorption of the head and neck in an old ununited fracture may be shown by a skiagram made when the limb is in external rotation.

The treatment depends upon the individual case. The operation of choice is the insertion of an autogenous bone peg taken from the tibia or fibula through the trochanter, the neck, and head, preferably under X-ray control. As a rule the bone ends should be freshened through an anterior incision, but when conditions are unfavorable only a small incision should be made over the trochanter.

In the cases of old or debilitated patients, nailing to stabilize the joint is indicated. When there is marked atrophy and absorption the head and neck should be removed and the denuded trochanter inserted into the denuded acetabulum. Retention is facilitated by removing the trochanter proper and attaching it to the shaft at a lower level. In the young, simple paring of the edges with perfect apposition has been successful, but bone grafting is far more certain. Grafts are not used when marked atrophy of the head is apparent.

The graft is absorbed but osteogenesis is stimulated by the living transplant, whereas metal, boiled bone, ivory, and other foreign materials inhibit callus formation. DANIEL H. LEVINTHAL.

Jones, S. F.: Fracture of the Tibial Spine. *Colorado Med.*, 1920, xvii, 217.

In a review of the literature the author finds 23 cases reported in a series of 9 articles. These date back beyond 1873, up to which time only 3 cases had been reported. Operative interference was advocated first by Pringle in 1907.

Points of diagnostic interest in these cases are that the injury is caused by direct violence when the knee is semiflexed, there is considerable swelling and pain, and flexion is usually limited to between 15 and 35 degrees.

The author reports a case under his care and 6 others under treatment by his colleagues.

Emphasis is placed upon the fact that the internal semilunar cartilages usually escape injury, the pain is excruciating, and marked swelling may occur within a few hours. The lesion will be demonstrated in the X-ray plate and therefore a roentgen examination should be made in every instance.

In old cases the treatment is operative. The approach is made through the split-patellar route recommended by Sir Robert Jones. No wire should be employed.

If the case is seen early, ice bags and a simple ham splint are applied at first and later a plaster cast. Complete immobilization for eight or ten weeks is essential before active motion is allowed. The result is usually a complete cure.

ROBERT V. FUNSTON.

Ammarelli, W. H.: Fractures between the Ankle and the Middle of the Tibia. *Pennsylvania M. J.*, 1920, xxiii, 602.

Fractures at the juncture of the center and the lower third of the tibia are comparatively frequent as this is the narrowest and weakest point, the nutrition of the lower third of the tibia is not as good as that in other parts because the nutrient artery enters at the upper third, and this area is frequently exposed to injury.

The fracture is usually oblique and extends from above and behind downward and forward. The upper fragment is displaced forward and the lower fibula is the tibia.

is regarded as essential for adequate separation, contrary to the teachings of Leopold and Koehrer.

Subcutaneous symphysiotomy stands midway between artificial premature delivery and caesarean section. In some cases it may be combined with the former to save the life of the child. It is indicated absolutely in osseous dystocia if the conjugate is below 8 cm. The indications do not depend entirely upon the conjugate, however, as the pelvis as a whole must be taken into consideration. In certain types of deformity, such as funnel-shaped pelvis, justumunor pelvis, and sacrocoxygeal ankylosis, the operation may be performed without strict regard for the conjugate. Relative indications include generally the same conditions as those for forceps and version.

WILLIAM R. MEERER.

PUERPERIUM AND ITS COMPLICATIONS

Bonney, V.: An Introductory Paper on the Prevention and Treatment of Puerperal Sepsis. *Brit. M. J.*, 1920, ii, 263.

The solution of the problem of preventing and curing septic infection of the puerperal uterus requires the determination of. (1) the original source of the organism, (2) the mode of its entrance into the uterus, and (3) its exact situation by the time it has produced symptoms of sepsis.

In nearly all cases of severe sepsis the streptococcus, either alone or in conjunction with bacillus coli

difficulty has been overcome to a large extent by antiseptic midwifery. The carrying of bacteria, such as the streptococcus of high virulence, a delicate organism which dies rapidly in the open air, is not

sepsis. Although this organism is found in only a certain number of the cases of puerperal sepsis, other types of streptococci found in a septic uterus may be isolated from the bowel. Moreover, septic foci in the teeth, mouth, or throat, an unsuspected suppurating appendix continually discharging into the caecum, catarrhal patches on the colic mucosa, or a chronically inflamed pile may be sources of infection producing virulent puerperal sepsis.

In the author's opinion too little attention has been paid to preventing the entrance of intestinal bacteria into the uterus and too much attention is given to the prevention of the entrance of extrinsic organisms. Great technical care should be used in isolating the anal area as far as possible from the field of operation during obstetrical procedures. A 1 per cent solution of equal parts of crystal violet and brilliant green in half and half alcohol and

larger number of cases of puerperal sepsis, however, intravaginal or intra-uterine manipulation has not taken place. Therefore, certain organisms transplanted into, or originally present in the vagina must be transported into the uterus in some way subsequent to labor. The experimental work of Bond seems to indicate the presence of an ascending current along the surface of the vaginal, cervical, and uterine canals. Another possible route of infection is transperitoneal transmission of the organisms.

The exact situation of the infecting agents by the time the symptoms of sepsis are produced is important as regards treatment. Unlike septic abortions, puerperal sepsis is not usually associated with retention of gross fragments of placental tissue in the uterus. Taking all cases into consideration, sepsis occurs as commonly when the uterus is completely emptied as when it is incompletely emptied. The organisms are situated in the uterine wall almost from the beginning of the infection and shortly afterward attain a deeper position. The commonest route of infection is by way of the

obtained by antiseptic surgery. In addition to the fatalities, many patients who ultimately recover are seriously ill and there are many cases of fever due to minor degrees of sepsis. The fact that this condition persists in spite of present-day antiseptics suggests an affirmative answer to the question as to whether or not organisms capable of producing puerperal sepsis commonly pre-exist in the body. The organisms which are pathogenic in puerperal sepsis may be isolated constantly from the lower bowel. The streptococcus faecalis is mentioned as the causative agent in appendicitis, pelvic inflammation, and puerperal and abortional

ments. Extension along the tubes is rare after full-time delivery. Ovarian abscess is more common because of a lymphatic drainage. Active peritonitis is unusual but when it does occur is generally localized around an ovary or tube. Passive peritoneal infection is present in a large proportion of the fatal cases.

1. Traumatic lesions in which there is extensive bone destruction, as in injuries of all sorts, complicated fractures, destruction due to prolonged suppuration, fractures in which coaptation cannot be effected, and pseudarthroses.

2. Bone diseases such as bone cysts, osteomyelitis, bone tuberculosis, osteitis fibrosa, and neoplasms such as sarcoma, myeloma, adamantinoma, etc.

3. Congenital absence of bone.

4. Deformities, either congenital or acquired, as in aplastic bones of the extremities, saddle nose, aplastic mandible, etc.

Transplants have been made of many materials. The use of foreign bodies, such as metal, gum elastic, ivory, etc., has been abandoned, however, as regeneration does not occur when such materials are employed. Transplants of bones of animals usually die because of the changed serological reactions in their new environment. When dead human bones, which have been dried and prepared in a special way, are used, the transplant undoubtedly acts simply as a support. With its absorption regeneration of living bone fills the defect.

The most successful method according to our modern conception is that in which autotransplants are employed, the bone graft being taken from the same individual into which it is to be transplanted.

separate bone. In certain cases a portion of the tenth rib has been transferred to the inferior surface of the ulna, and in others, to the mandible. Fragments of the tibia of various sizes and shapes may be taken from the anteromesial surface without impairing the function of the leg, and the loss of bone is soon made up in regeneration. Such grafts may be used in most of the long bones of the body, in the Albee operation for Pott's disease, and in the treatment of cranial defects.

As bone transplants will not survive in any considerable degree of infection, asepsis plays a major role in the technique of transplantation. The operative field is shaved forty-eight hours before the operation, and just before the transplantation it is mechanically cleaned and alcohol and iodine are applied. The transplant is removed best by circular saws of various sizes, either single or parallel, driven by an electric motor. Care must be taken to preserve the periosteal covering. The transplant is not touched by the hand, being held by forceps as it is placed in the bed previously prepared for it. The ends of the transplant are fixed into the adjacent ends of the living bone either by allowing the graft to impinge into the medullary canal or by fastening it with sutures of kangaroo tendon. The transplant should never be fastened with non-absorbable foreign materials as these act as irritating bodies.

As to the ultimate fate and function of the transplant authorities differ. Some maintain that the

graft dies and serves only as a stimulus to natural bone production. Others claim that the bone is reabsorbed and that new bone is formed only by the periosteum of the graft. Still others claim that proliferation is due to osteoblasts within the bone itself and that the periosteum does not produce bone tissue. Probably the most generally accepted theory is that regeneration of bone takes place not only from the periosteum but also from the endosteum and osteoblasts about the haversian systems.

Details of several case histories are given with illustrations of the author's special technique.

WILLIAM R. MEEKER.

Zadek, I.: The Correction of Congenital Club-Foot in Infants. *J Am M Ass*, 1920, LVII, 536.

The author believes that the most satisfactory time at which to begin the treatment of congenital club-foot is when the child is two weeks old. The object of treatment is to correct the deformity and to secure a relatively normal amount of motion. These results may be secured by considerable over-correction maintained for many weeks.

There are two types of club-foot as regards shape: the long foot of relatively normal size, and the short, thick foot which is particularly broad in the forepart. The latter type is usually more difficult to treat than the former.

The varus must be completely corrected before the correction of the equinus is attempted as the normal relationship of the astragalus must be restored before dorsal flexion is begun.

The author advocates the use of plaster of Paris changed at intervals of two weeks. The correction should be continued until the dorsum of the foot is against the lower part of the leg. This position should then be maintained for six or eight weeks. To keep the child from kicking the cast off, an adhesive strip may be placed on each side of the leg and incorporated into the plaster.

After the equinus is overcome, the correction is best maintained by adhesive strips. To prevent cutting of the adhesive at the base of the great toe, several thicknesses should be used at this point. After the adhesive is removed, the child's mother should be instructed to put the foot through the full range of motion opposite the original deformity frequently during the day.

In some instances retention splints may be necessary, but usually when the case is properly supervised no splint is required. When the child begins to walk the outer border of the shoe should be raised $\frac{3}{4}$ in.

Sometimes, despite much effort and the division of the Achilles tendon, the equinus cannot be overcome manually. In such cases the short posterior ligaments must be cut subcutaneously and the foot then put up in plaster in the calcaneovalgus position.

The author believes that relapses of congenital club-foot treated early are due chiefly to the lack of sufficient treatment.

DANIEL H. LEVINTHAL.

treatment consisting of from 4 to 6 injections of salvarsan followed by a course of mercurial treatment which resulted in a negative Wassermann test

In the three categories there were 157, 103, and 163 patients, respectively. The results of treatment are graphically shown by the fact that in the first group 52 per cent of the children were born

is recognized early and treated intensively and appropriately almost perfect results may be obtained as far as the child is concerned. Consequently there is every reason to hope that in the future the condition may be practically eradicated as a cause of foetal death in all properly conducted clinics

On the other hand, it must be realized that ideal results will never be obtained, even with the most perfect mechanism as Williams' investigations show that the disease will escape recognition in a certain proportion of pregnant women for the reason that they frequently exhibit no clinical manifestations and occasionally present a negative Wassermann reaction as well, so that the presence of the disease is not suspected until a macerated child is born or the non-macerated child is shown to be syphilitic at autopsy

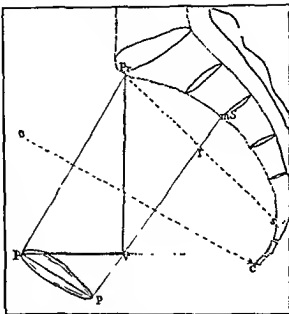
CARL H. DAVIS

Gonzalez, J. B. The Modular Angle of the Normal Pelvis or the Problem of the Geometrical Pelvis (Angulo modular de la pelvis normal o el problema de la pelvis geometrica) *Rev argent de obst y ginec*, 1920, IV, 1

The pelvis in the diagram given in this article is constructed as follows

From the point V of the horizontal line PV which is 55 mm long a perpendicular line, VPr, 95 mm. long, is drawn. The free extremity of the line PV represents the upper border of the pubis, and the line Pr, the sacral promontory. The right angle VPr is the modular angle of the normal pelvis.

When the points Pr and P are connected a right angled triangle is formed with a hypotenuse of 115 mm. A line 45 mm long projected downward and backward at right angles to P represents the axis of the symphysis pubis and forms an angle of 30 degrees with the suprapubic horizontal PV.



From the lower extremity of this axis, P, a line 12 cm long is projected through the point V, the point mS represents the location of the second sacral synostosis. This line corresponds to Farabeuf's mis-

sacral curvature.

This geometrical figure is offered as a practical anatomical study of the normal pelvis. The dimensions are easily remembered and a sagittal section may be correctly reproduced with ease. In the anatomical study of the pelvis, especially the study of the dimensions by Verneau's method, the modular angle will undoubtedly be of aid.

WILLIAM R. MEERER

or ate, the bladder becomes paralyzed. The symptoms indicate a localized lesion, and extension is usually of the cross-section type.

Three groups of cases may be considered in the differential diagnosis: (1) those in which root pains are noted but paralysis has not yet developed, (2) those in which paraplegia has developed and has followed definite root pains, and (3) those in which paraplegia has developed, but root pains have been indefinite or absent.

The early diagnosis of cases in Group 1 is difficult, the condition having been confused with stone in the kidney, gall-stones, flatulence, intestinal colic, and intercostal neuralgia. If tabes dorsalis is excluded, bilateral pains limited to a few spinal roots and diminished cutaneous sensibility over the same area are suggestive of tumor. If root pains are felt in the arm or cervical rib, primary brachial neuritis, intrathoracic aneurism or new growth must be considered in the differential diagnosis. The diagnosis of primary brachial neuritis is correct only

those affections cause much confusion. A positive history of syphilis, a positive Wassermann reaction, and im-

meningeal gumma root pains cover a wide area and are not localized. Occasionally, however, meningeal gummata are not diagnosed until the time of opera-

tion. In spinal pachymeningitis pain is bilateral and as a rule extends over a wide area.

Spinal caries may be eliminated by prominence of the vertebral spines, muscular spasm, and the X-ray examination. Vertebral tumors are mostly malignant and metastatic; the pain is severe, particularly on movement, and is felt in the spine as well as along the course of the nerves affected.

The fact that the symptoms of intramedullary tumor are pract-

In cases of there are usually no root symptoms. Trophic and vasomotor phenomena in the skin, bones, and joints are common, and as a rule extension is extremely slow and occurs in a vertical direction.

In Group 3 the diagnosis rests on symptoms indicating a progressive and transverse extension of the spinal cord lesion with a stationary upper limit.

Tumor cells have been found in the spinal fluid, and by some observers a yellow color (xanthochromia) is regarded as an indication of spinal tumor.

Hydatid cysts of the meninges produce the same symptoms as other tumors, but the diagnosis may be made by the finding of cysts in other parts of the body. These cases are particularly suitable for operation. Ten of 75 patients with hydatid cysts were operated on successfully.

Spinal meningeal tumor is not so rare as is generally believed. Careful consideration in early disease of the spinal cord would lead more frequently to its early recognition and to early successful operation.

A. C. JOHNSON.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Love, R. J. M.: Some Surgical Complications of Dysentery. *Practitioner*, 1920, cv, 11

The author divides the cases reported into two

including those in which surgical treatment was necessary because of complications secondary to

of cases and its

was sudden and characterized by fever, diarrhoea, tenismus, and the passage of blood-stained mucus, and in which there was no reaction to medical or serum treatment gave very discouraging results.

In chronic cases which slowly retrogressed in spite

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proved by means of bismuth enemata that all of the

large bowel can be reached by injections given through the rectum.

Cæcostomy and drainage by Paul's tube gave better results, but drainage was never complete and the patient's condition seemed to vary with the amount of drainage.

Ileostomy appeared to be the most satisfactory operation. It puts the colon at complete rest as it prevents irritation by undigested food and the stimulation of peristalsis by the passage of faecal material.

Whenever a liver abscess was suspected the clinical symptoms and X-ray findings, blood examination, and exploratory puncturing with a needle generally confirmed the diagnosis. If pus was found, the needle was left in place and a portion of rib was excised as in cases of empyema. The costal and diaphragmatic pleura were then sutured and the diaphragm incised at right angles to the direction of the muscle fibers so that its contractions would not interfere with drainage. The needle being used as a guide, the liver tissue was then gently broken down until the abscess was reached. The abscess was drained with a rubber tube wrapped in gauze and the area irrigated with quinine solu-

the bladder before the removal of the stone. In Toupet, R.: *The Technique of Nephrostomy (Technique de néphrostomie)* J. d'urologie et chir., 1917

as to necessitate the termination of pregnancy. Operation was not advised in 79 cases of renal lithiasis during the years 1917 and 1918 on account of co-existing diseases. These diseases the author tabulates.

About 50 per cent of stones in the lower ureter which do not pass spontaneously may be removed by non-operative procedures. A stone more than 2 cm in diameter which has been lodged in the ureter from three to six months usually cannot be dis-

to further attempts are a stone more than 2 cm. in diameter, acute impaction with continuous obstruction, acute renal infection, intolerance on the part of the patient to the cystoscope, and anatomical deformity.

In conclusion the author emphasizes three points with regard to renal and ureteral lithiasis: (1) the majority of renal and ureteral stones pass spontaneously, (2) a large number of stones in the lower ureter, which do not pass after one or two attacks of renal colic, may be dislodged by cystoscopic manipulation; and (3) immediate operation for the removal of small stones producing symptoms of short duration is seldom justifiable.

MERLE R. HOON

Rytina, A. G.: *The Treatment of Essential Renal Hematuria by Intrapelvic Injections of Silver Nitrate.* J. Urol., 1920, 11, 317

The treatment of painless and more or less constant essential renal hematuria is of two kinds,

conservative methods of treatment before surgical intervention such as nephropexy, decapsulation, nephrotomy, and nephrectomy, is considered.

In non-operative treatment the injection of from 4 to 8 ccm. of a 5 per cent solution of silver nitrate into the kidney pelvis is of great benefit. Three cases

silver nitrate were injected into the kidney pelvis and within forty-eight hours the bleeding had stopped entirely and the urine was microscopically and chemically negative as regards blood.

HENRY W. PLACEMEYER.

renal artery

On the basis of a large number of experimental investigations on the cadaver carried out since 1912 Toupet has devised a method of performing nephrostomy which obviates the disadvantages in the classical operations. So far, however, he has not tested it out clinically. Instead of the difficult search for the inferior calyx through the bleeding renal parenchyma the kidney pelvis is located and incised and a bent forceps is easily pushed into the inferior calyx, the kidney is perforated from the calyx toward the convex edge, the jaws of the forceps are then opened, and a sound is drawn through into the pelvis. It is impossible to make a false passage and the traumatism is reduced to a minimum. The sound is fixed to the kidney capsule and the kidney itself is fixed in the lumbar wound in order that the trajectory may be as direct as possible and found again easily if the sound is removed. The entire kidney must be brought to the surface and the posterior side of the pelvis exposed.

The technique is described in detail and illustrated. Certain modifications are necessary if it is desired to deviate the course of the urine.

WILLIAM A. BRENNAN

Kidd, F.: *The Treatment of Calculi Impacted in the Pelvic Portion of the Ureter.* Brit. Med. J., 1920, II, 160

nosis at the site of the impaction frequently develops, with consequent dilatation of the portion of the ureter from above is of the ureter

renal stone are
t a stone may remain lodged for many years in the lower ureter without giving rise to symptoms. Hematuria is common, but not always present. A diagnosis of ureteral calculi can scarcely be made, however, in the absence of microscopic blood in the urine.

A correct diagnosis is essential to proper treatment. Several causes of renal colic, such as the passage of stone, blood clot, tuberculous curds, masses of new growth, or hydatid cysts, must be borne in mind. Renal colic may be caused also by stenosis or kinking of the ureter. Ureteral pain should be distinguished from pain arising in other intra-abdominal organs and from tabetic crises. X-ray study supplemented by special urological methods is of great value in arriving at a correct diagnosis.

demonstrated that the preparation employed is active, and second, if the preparation is found to be active, then the extract of another gland should be tried, the one which stands second in the list of probabilities being chosen. If then no single glandular extract proves beneficial, it becomes logical and reasonable to employ combinations of synergistic extracts. Such combinations should be made as the symptoms warrant.

EUGENE CARY.

BLOOD

Busman, G. J.: Rubber Tubing as a Factor in the Reaction to Blood Transfusion. *J. Lab. & Clin. Med.*, 1920 v, 693.

In an article in the *Journal of the American Medical Association*, April 10, 1920, Stokes and Busman of the Mayo Clinic described the reactions of patients receiving intravenous injections of arsphenamine and alkaline solutions through a certain brand of rubber tubing. The fact that a number of persons have been observed to experience a similar reaction following blood transfusion by the citrate method led Busman to study the possible relation of this reaction to new rubber tubing. Although the transfusion reaction in question is not so severe as that following the intravenous administration of arsphenamine through new tubing, a chill comes on from one-half to one hour after the injection and, with a gradual rise in temperature.

his study of the transfusion reaction. In order to approach the technique of transfusion in man as nearly as possible the experiments were performed under rigid asepsis. With continuous stirring, blood was drawn into sterile flasks containing 2 per cent sodium citrate solution until a concentration equivalent to 30 ccm. of citrate solution to 250 ccm. of blood was reached. In every instance each dog was given a transfusion of his own blood.

From this series of experiments the following

produced a reaction when intravenous injections of arsphenamine were given is apparently able also, when new, to produce a reaction if used in blood transfusion.

2. The toxic substance is taken up in sufficient

3. Enough of the toxic agent is taken up by 250 ccm. of normal uncitrated blood drawn through as little as 35 cm. of new rubber tubing (internal diameter 4 mm.) en route from the vein to the container of the citrate solution to produce a marked reaction when given through an old tube. Therefore

it is not necessary that whole blood be citrated for it to absorb the toxic principle.

4. The mechanically removable debris from the inside of new sterilized tubing does not produce a reaction when given in suspension in distilled water or 0.18 per cent sodium hydroxide solution.

5. The toxic agent may be removed from new tubing by soaking the tubing in normal sodium hydroxide solution for six hours.

The author does not assume that rubber tubing is responsible for all transfusion reactions which present chills, fever, prostration, etc., but regards it merely as one factor. He is still investigating the identity and toxicology of the poisonous principle.

Bloch, M.: Coagulation of the Blood: A Study of the Anti-Coagulant Action of Sodium Citrate and of the Part Played by Calcium in the Blood. *Lancet*, 1920, cxcix, 301

The author calls attention to the inadequacy of the methods generally used at present in determining blood coagulability. While they serve fairly well to demonstrate states of decreased coagulability, they lend themselves with the utmost difficulty to the determination of states of increased coagulability. To be satisfactory a method *in vitro* must permit the immobilization of the forces of the coagulation reaction without in any way impairing them and must also permit the initiation of the reaction again at will.

The action of sodium citrate differs in two ways from that of the two other most frequently used anti-coagulating salts, the oxalates of potassium and sodium and the fluorides of sodium. Coagulation may be made to occur in citrated blood by the addition of extraneous calcium ions, but this is not possible if coagulation has been prevented by the use of the fluoride or an excess of the oxalate. A second difference may be observed in the antagonistic action of sodium citrate toward the precipitation of salts. The alkali oxalates and fluorides do not have such anti-precipitative qualities.

In considering the action of the citrate on the blood calcium the author quotes the view of Sabatani who holds that while the citrate does not precipitate the calcium in the blood, it modifies its state of ionization and thus annihilates it functionally.

Another view of the action of calcium in the

lyte" which tends to precipitate the solution, but the presence of the citrate entirely prevents this by placing the calcium in what is termed an inactive hidden state. In the light of this conception, the author suggests the hypothesis that the calcium exists in the circulating blood in an inactive latent state, and that even the simplest changes in its physical reactions may be sufficient to convert it into an active electrolytic precipitant and thus

is placed in the bladder so that the opening will heal by primary intention. After that the fistula is closed secondarily.

The same method is followed if the removal of all scar tissue is impossible. As a second choice the defect may be closed by plastic methods by which a flap is brought into place or a vein or the appendix is used to repair the defect. The latter method, however, is often unsuccessful.

If the urethral stricture is complicated by a fistula and a large defect is present, plastic closure with a pediculated flap is indicated. The pedicle of the flap should be as broad as possible, the flap itself as short as possible. If a flap is required which is long in relation to the length of its pedicle, the defect should be covered in several stages. If all the scar tissue cannot be removed and if it is impossible to obtain sufficient material for a flap, the scar itself may be utilized for plastic closure of the defect. In most cases, however, a flap may be obtained from the inguinal region, the skin of the thigh, and especially the skin of the scrotum. In many cases a complete result is not obtained at the first attempt and repeated operations are necessary.

ADLER (Z)

GENITAL ORGANS

Macht, D. I., and Matsumoto, S.: Physiological and Pharmacological Studies of the Prostatic Gland. II. The Action of Prostatic Extracts on Excised Genito-Urinary Organs. *J. Urol.*, 1920, IV, 255.

Genito-urinary organs or parts of organs freshly excised from various animals having been suspended in warm and oxygenated physiological solutions, the curve of normal tonus and contractions was studied. Small doses of a prostatic extract were then introduced into the chamber and their effect on tonus and contraction was observed. The investigation showed that all the genito-urinary organs studied are stimulated by prostatic extracts, but the minimal amount required for such stimulation varies with the kind of organ, the animal to which it belongs, and the nature of the extract. The uterus and tubes are most easily and quickly excited to contraction. Next in order come the bladder, the ureters, the vas deferens, and lastly the seminal vesicle. No definite or specific relationship between the tonus and contraction of the bladder and extracts of the prostatic gland was noted.

HENRY W. FLAGGENMEYER.

Lespinasse, V. D.: Local Treatments for Seminal Vesiculitis, with a Description of Some New Methods. *J. Urol.*, 1920, IV, 265.

The author presents new methods for making injections through the vas deferens in the treatment of seminal vesiculitis. By one of these procedures the vas is exposed and wrapped with a Thiersch skin graft so that it projects free from the scrotum. The second method consists of the "intradermal trans-

plantation of the vas." The most simple procedure, which does not require incision or dissection, is a "percutaneous puncture of the vas." To insert a needle into the lumen of the vas without making a cut through the skin Lespinasse holds the vas in a small fold of skin by means of clamps. This manipulation identifies the vas through which the needle can be inserted.

The author has found that 10 per cent collargol is the least irritating antiseptic and enters the vesicle well. A 1 per cent solution of sodium bicarbonate is safe, but a 5 per cent solution is destructive to the epithelium. Acriflavine 1:1000 also destroys the vas epithelium. Bactericidal serum is absolutely specific and may be administered successfully by percutaneous puncture of the vas.

HENRY W. FLAGGENMEYER.

MISCELLANEOUS

Labbe, M., and Carrié, P. A.: The Enterohepatic Theory of Urobilinuria (La théorie enterohepatique de l'urobilinurie). *Presse méd.*, Par., 1920, XXVIII, 353.

As a result of their investigations regarding urobilinuria the authors are convinced that the only theory which explains the genesis of urobilin in accordance with the clinical and experimental findings is the enterohepatic theory. Urobilinuria is the index of functional insufficiency of the liver rather than hyperfunction. It may coincide with, but is not the consequence of, hypercholemia.

While it is possible that urobilin may originate in the blood itself in the course of serious hemolytic conditions, or from a subcutaneous hematoma, or even from changes in the bile pigments impregnating the tissues, such an origin is quite exceptional.

WILLIAM A. BRENNAN.

Crosbie, A. H.: The Diagnosis and Treatment of Tuberculosis of the Genito-Urinary Tract. *Boston M. & S. J.*, 1920, CLXXIV, 134.

In this paper the author gives a brief résumé of the views generally held today regarding the symptoms, diagnosis, and treatment of renal tuberculosis.

Crosbie believes that infection of the epididymis is always secondary to infection of the prostate and seminal vesicles. He is opposed to the operation of epididymectomy for tuberculosis of the epididymis for the reason that the primary focus in the seminal vesicle is not attacked in this operation. If any operative procedure is required, he favors the radical operation described by Quinby (*J. Am. M. Ass.*, Nov. 30, 1918), but believes such a radical procedure is rarely indicated. He relies on hygienic measures. In cases of abscess formation, he believes the ulcers should be allowed to rupture spontaneously. They will drain for a time and finally heal.

No mention is made of the use of tuberculin in the treatment of genital tuberculosis.

HARRY A. FOWLER.

A profuse growth of the gonococcus may be obtained on media the reaction of which varies between pH 6.6 in the acid range and pH 8.0 in the alkaline range of the hydrogen-ion scale if the incubation is carried out under partial oxygen tension.

Details are given for the preparation of a medium which has been proven satisfactory for the primary culture and growth of the gonococcus. In addition, an extremely reliable method is described for reducing the oxygen tension in culture tubes.

SAMUEL KAHN.

Silver

The author has studied the changes in the liver following splenectomy in 32 rabbits. His findings are summarized as follows:

1. Following the extirpation of the spleen in rabbits, an operation generally well tolerated, nothing very special is observed in the liver at first except a diminution in the bile. This is due probably to a decrease in the biliary secretion caused by the partial suppression of the portal circulation.

2. Later the liver increases slightly in weight and the microscopic examination shows a lymphatic hyperplasia appearing first about the portal vessels and then about the hepatic lobules. This is due probably to compensatory activity of the deep lymphatic elements of the liver and doubtless explains the increase in the weight.

3. Next, a slight and transitory alteration of the hepatic cells in different parts of the liver is observed. Subsequently the liver returns to its normal state but the numbers of leucocytes within its tissues are increased.

WILLIAM A. BRENNAN.

Sabucedo, C.: A Contribution to the Histopathologic Study of the Suprarenal Glands in Tetanus Intoxication (Contribución al estudio histopatológico de las capsulas suprarenales en la intoxicación tetánica). *Siglo méd.*, 1920, lxvii, 283.

Sabucedo injected into rabbits doses of tetanus toxin sufficient to produce tetanic spasms of five or six days' duration. When near death the animals were killed and the suprarenal capsules rapidly extracted and fixed in Muller's fluid. This fluid hardened them to a point convenient for frozen sections and at the same time colored the chromaffin substance. Some of the sections were stained in hæmatoxylin followed by Sudan III and mounted in glycerine which gives a characteristic color to the lipoids of the cortex. Other sections of the same specimen were then stained in hæmatoxylin and eosine without differentiating the nuclear tint in acid solution in order that the chromaffin reaction might not be altered.

These investigations demonstrated that the lipoids in animals dying from tetanus are present in the same quantities as in normal animals but that often

the drops of lipoids appear somewhat larger. The marked changes occur in the medullary portion. Chromaffin cells show necrotic changes, many nuclei being in advanced stages of pycnosis and others showing chromatolysis. The chromaffin substance is scarce. Occasionally it is absent entirely in certain zones, but more commonly is disseminated in the

either to insufficient production or excessive consumption, but at the same time, in addition to accordance with experimental histopathologic observations.

WILLIAM R. MEEKER.

ROENTGENOLOGY AND RADIUM THERAPY

Davis, J. S.: The Radical Treatment of X-Ray Burns. *Ann Surg.*, 1920, lxxii, 224.

Although today X-ray burns are comparatively rare, the author has had a number of cases under his care during the past ten years.

The burns are now usually caused by the use of X-rays in the treatment of skin diseases. Considerable time may elapse after the exposure before the extent of the damage becomes apparent. Some very severe burns follow single exposures while others result from multiple exposures.

X-ray burns may be superficial or involve the full depth of the skin and a considerable amount of the underlying soft parts. The history of many of them is that they heal slowly and then break down, this process being repeated over and over. Some never heal without operative interference.

The edges of the ulcers are thickened and grayish-red in color, very hard, and often everted. The clinical appearance is suggestive of malignancy.

Exquisite sensitiveness is characteristic of the deep burns. The pain may be due to irritation caused by infection, changes in the nerves, pressure exerted on the nerves by scar tissue, or any combination of these factors. In some cases intense pain after spontaneous healing may make operative interference necessary.

The author's experience has been that the tendency toward malignant degeneration in these burns is no more marked than that in any other chronic ulcer. This tendency is distinct, however, when chronic ulceration follows the breaking down of a patch of keratosis such as is found on the hands of the roentgenologist.

Recent X-ray burns of any degree should be treated at first as ordinary burns, but unless the response to such treatment is prompt, it should not be continued. In cases of burns of the first and second degrees palliative measures should be used. The author considers more especially in his paper the treatment of third degree burns. When burns of the third degree do not heal promptly and permanently following the usual therapeutic methods he

SURGERY OF THE EYE AND EAR

EYE

Benedict, W. L.: The Early Diagnosis of Pituitary Tumor with Ocular Phenomena. *Am J Ophth*, 1920, III, 571.

The marked advance in surgical therapy of pituitary disorders made during the past five years is due in large part to the greater certainty with which tumors of the hypophysis have been diagnosed, and to the fact that such a diagnosis can be made early in the course of the disease.

Ocular changes constitute the chief symptoms in a large number of cases of pituitary tumor and are often the only means of identifying the condition. These consist in contracted fields, lowered visual acuity, and changes in the ophthalmoscopic picture of the nerve heads. The frequent absence of constitutional disorders and the negative findings on examination of the central nervous system except as regards ocular disorders place such cases in the hands of the ophthalmologist.

The characteristic ophthalmoscopic picture in the early stages of the disease consists of a waxy pallor of the nerve head without shrinkage or other change in form, and serves as a basis for estimating the probability of recovery of vision.

Atrophy of the optic nerves following shortly after the onset of visual changes indicates pressure rapidly produced or pressure associated with processes leading to early destruction of the optic tract. Since rapidly developed pressure is more apt to result from malignant tumor or cysts than from benign tumors the prognosis in cases of beginning atrophy early after the onset of visual changes must be guarded. As optic atrophy of both eyes ensuing after long duration of visual symptoms will not be improved materially by the removal of the pressure, the prime object to be attained by the operation is beyond reach, and operation for visual purposes should not be undertaken. The chief object of the ophthalmoscopic examination then is to ascertain whether or not the optic nerve has atrophied.

The visual acuity and visual fields may not be of aid in the prognosis in cases of low vision, and it is only from the amount of atrophic shrinkage that it can be determined whether the nerve will be in a condition to resume function when the cause of the pressure has been removed.

Hay, P. J.: Some Plastic Operations about the Lids and Socket. *Brit J. Ophth*, 1920, IV, 368.

The use of grafts with pedicles rather than isolated grafts is advocated because the former are easier to work with, they "take" more frequently, and the flap may be kept very thin and undergoes little shrinkage.

In operations for ectropion of the lower lid Hay transplants into the lower lid, close to the free border, a flap taken from close under the eyebrow with a pedicle slightly above the sac region (or above and external to the external canthus). If the entire lower lid is affected, a strip with a pedicle at both ends is used. To obviate bulging, the flaps are made thin.

To form a lower cul-de-sac, Hay takes a narrow flap with a broad pedicle from low down on the lid and, buttonholing the lid, sews the upper edge of the flap to the posterior wound of the conjunctiva. A week later he cuts the skin portion of the pedicle and sutures it to the palpebral conjunctiva, at the same time closing the lid wound from which the pedicle was taken. This graft is anchored firmly to the periosteum.

The same operation may be done with the upper lid to make a fornix or fix the soft tissues of the roof of the orbit when they interfere with the wearing of an artificial eye.

THOMAS D. ALLEN.

Matsuoka, Y.: The Nature of the So-Called Blood Infiltration of the Cornea. *Am J Ophth*, 1920, III, 564.

The so-called "blood infiltration of the cornea" occurring in traumatic hemorrhage into the antechamber is characterized histologically by the presence of numerous peculiar round or spindle-shaped highly refractive granules in the parenchyma of the cornea. These granules have been variously described as types of organisms, crystallized fibrin, hyalin, degenerated corneal fibrils, hemoglobin derived from hyalin substance, an albuminous mass separated from hemoglobin, etc.

The author reports the clinical and histologic findings in two cases which he believes furnish some evidence as to the nature and origin of these granules. In the first case, a case of old traumatic hemorrhage of the vitreous, histologic examination of the vitreous revealed numerous small granules, some of which were free and others contained in blood-cell shadows. This finding, in the author's opinion, proves that the granules arise from the blood-cell shadows. In the other case, a case of traumatic hemorrhage of the vitreous and anterior chamber with typical blood infiltration of the cornea, similar granules were found both in the vitreous and in the parenchyma of the cornea. These granules were of the same type as those which have been described as characteristic of the so-called "corneal blood infiltration." Therefore as those found in the vitreous and those found in the cornea showed the same behavior toward different stains and chemical reagents, it is probable that they are identical.

From these facts it seems evident that the corneal granules are not formed *in loco*, but are carried to the

change takes place and the rapid spreading of the growth is retarded. The lethal dose destroys the malignant cells for a certain distance and sterilizes at a greater distance, in this way preventing rapid extension and metastasis formation.

Embedding tubes of radium in cancer tissue and using radium needles serve a very useful purpose in that all of the radium rays are rendered effective. Since this method increases the possibility of stimulating the formation of metastases, however, it is well to irradiate the surrounding area previously.

W. L. BROWN.

LEGAL MEDICINE

The Rights of Physicians, Associations, and Sanatoriums. *Harris vs. Thomas et al. (Texas), 217 S. W. R., p. 1068*

A physician licensed under the laws of the State of Texas and practicing osteopathy, medicine, and surgery sued for an injunction to restrain a hospital and its staff of physicians and surgeons from further interfering with his practice in that particular hospital. It was alleged in the petition that the plaintiff had no disqualifying charges against him, but that the defendant physicians, in their organized capacity as well as individually, exercised an influence over the hospital and thus deprived him of the benefits to which he was entitled from his practice; also that the resulting damages to him could not be determined definitely and could not be paid for fully in money.

The defendant physicians were organized into a county medical association, and the plaintiff contended that by such an association they were endeavoring to injure, and were injuring, his practice. As the plaintiff was not a member of the medical association, his conclusion was to the effect that the members, by establishing certain rules and regulations, were in effect boycotting him and preventing him from pursuing his profession. He contended that they established an opposition to him. This was completely denied.

The court held that a voluntary association has the power to enact laws governing the admission of members and may prescribe the qualifications necessary for membership. Membership is a privilege which a society may accord or withhold at its pleasure, and courts do not generally interfere

the plaintiff to be an osteopath, and that, as such, be

him in operations. They could, if they deemed it or the welfare not to assist in good faith

With respect to the hospital, it was held to be the right of the institution to refuse to have business relations with a physician if this seemed proper, and also to adopt such regulations as are proper or deemed by it expedient to improve its efficiency and standards of service. It has a right to standardization and to require of those using its equipment that they possess certain specific medical learning.

For these reasons the injunction asked for was denied.

JOHN A. CASTAGNINO

Objection to Physician's Testimony as Privileged Must Be Timely. *State vs. Powell, Missouri Supreme Court, 217 S. W. R., p. 35*

In a murder trial a physician was called to testify as to who treated the defendant's injuries. In his testimony he stated that the defendant had cuts on his hands which he, the physician, believed were produced by something which resembled a barbed wire rather than a sharp instrument. No objection was made to this testimony until after it had been given. The objection was not sustained, however, as the court held that it was not made in time and the privilege was therefore waived.

JOHN A. CASTAGNINO.

Privileged Communications and Waiver—Unethical Practice. *Bauch vs. Schullz. (N. Y.) 180 N. Y. Supp., p. 188*

In this case the plaintiff, who had been injured, was suing to recover damages. The ambulance surgeon who first treated him after the accident was called by the defendant to testify. He and two other physicians from whom the plaintiff received treatment while in the hospital testified to material facts in the treatment without obtaining from the plaintiff a waiver of the right of privileged communications. The court held that such an utter disregard of the ethics of the medical and legal professions could not be passed by without serious condemnation. The relation of physician and patient is peculiarly confidential and is safeguarded by a law in the interest of the patient which forbids disclosures by physicians of material and necessary facts, the knowledge of which was gained in the treatment of the patient by the physician. (Note: This is the rule in New York and some of the other states. It is not the rule in Illinois.)

The court held that the fact that the plaintiff was a free patient did not alter the rule.

JOHN A. CASTAGNINO.

As a general rule the time of the after-nystagmus obtained by rotation was decreased but did not show that there was block of canal by rotation.

It did as probably influenced by involvement of the cerebellum through direct or indirect pressure.

In two cases with failure to produce nystagmus in a caloric test of the unaffected side after operation the test was of nystagmus and rotation.

ular reactions obtained in the rotation tests

In some of the cases postoperative tests of the side involved showed an increase in the cochlear function

Unilateral paralysis of the external rectus may cause unequal involvement of the eyes in the spontaneous nystagmus. In after-nystagmus by stimulation this is a negative factor

JAMES J KING

Carpenter, E. R. Intracranial Lesions Involving the Auditory-Vestibular Apparatus. *J Am M Ass*, 1920, lxxv, 469.

The three types of intracranial lesions in which auditory and vestibular tests may be of service are advantageously classified as follows: (1) lesions primarily involving the cerebellar fossa, (2) lesions primarily involving the brain stem and midbrain; and (3) lesions primarily involving the cerebral cortex and subcortical region.

In all cases in which major otological operations are necessary repeated vestibular tests should be made as they often indicate impending intracranial trouble long before the clinical symptoms of the develop

Lesions in the region of the cerebellum are represented by acute inflammatory diseases involving the meninges, acute and chronic abscesses, tumors of the meninges and nerve trunks, syphilis in its various forms, traumatism, circulatory diseases, tuberculosis, and multiple sclerosis.

It is a noteworthy fact that 8 per cent of abscesses in the posterior fossa are due to infection of the ears. According to Cushing, 6 per cent of all brain tumors and over 20 per cent of all tumors of the posterior fossa originate in the eighth nerve. A correct diagnosis must be based on the demonstration of

toms

Some impairment in the auditory-vestibular apparatus is present in at least 50 per cent of all cases of brain syphilis and occasionally this apparatus is involved also in lesions due to traumatism, tuberculosis, circulatory disturbances, and multiple sclerosis. Aside from intracervical lesions which involve the auditory vestibular apparatus directly, tumors in the supratentorial region, or frontal lobe tumors, may cause symptoms from transmitted pressure closely resembling those observed in direct lesions. In such cases the vestibular tests are frequently valuable in the differential diagnosis between cerebellar and cerebral lesions.

JAMES J KING.

strates are clearly operable; (2) cases which are doubtfully operable; (3) cases in which an operation is absolutely impossible; (4) advanced cases in which all treatment is hopeless; and (5) cases in which the condition has recurred after a panhysterectomy.

It has been found that when patients in Groups 2 and 3 are treated with radium alone the prognosis is better than when they are subjected to panhysterectomy, excochleation, or cauterization.

Recurrences are very refractory, probably because of the heavy connective-tissue reparative process.

The author has applied radium also directly to metastases in the abdomen but so far has been unsuccessful with this method. MARCUS H. HONART.

Polak, J. O.: Total Hysterectomy in Fibroid Tumors of the Uterus; A Plea for This Procedure in Parous Women When Operation Is Necessary. *J. Am. M. Ass.*, 1920, LXXV, 579.

The author claims that supracervical hysterectomy for fibroid tumors is not the operation of choice in all cases. His follow-up work has shown that the lacerated or infected cervix remains as a constant menace to the woman's health, causing leucorrhœa, metrorrhagia, and backache, and, with its lacerations, eversion, and erosion, paves the way for the occurrence of epithelial cancer in the retained stump. From American literature Polak has collected the records of 256 cases in which cancer occurred in the cervical stump after subtotal hysterectomy for fibroid tumors. These do not include cases in which the cancer made its appearance within one year after the original operation as in such instances it is probable that the disease was present at the time the fibroid was removed.

In the author's experience the postoperative morbidity has been less after the complete hysterectomy than after the subtotal operation, the mortality but $\frac{1}{2}$ of 1 per cent higher, and the difficulty and time of the operation not any greater. Unless a wide cuff of vaginal mucosa is removed, the vagina

the uterosacrals. This step, with repair of the perineum when indicated, prevents prolapse of the vault of the vagina.

Polak concludes that when it is necessary to operate for fibroid tumor of the uterus in the cases of parous women or those who have had trauma or infection of the cervix, total hysterectomy is the operation of choice. SIDNEY A. CHALFANT.

ADNEXAL AND PERI-UTERINE CONDITIONS

Schochet, S. S.: The Physiology of Ovulation: A Preliminary Report. *Surg., Gynec. & Obst.*, 1920, XXXI, 148

The investigations reported were made on the ovaries of the sexually mature hog (*sus scrofa*). The histological examination indicated that the production of the liquor folliculi in the graafian follicle

and the extrusion of the ovum are the same in this animal as in woman and the author believes it is logical to assume that the liquor plays the same role as in human ovulation and that its physiological action in the hog is similar to that in woman.

In the experiments amniotic fluid and fluid from ovarian cysts of the hog were compared with the liquor folliculi and also with fluid from human ovarian cysts. The liquor was obtained under aseptic conditions to avoid any error due to bacterial activity.

The technique used in this experimental work was based on the principles of the Abderhalden dialyzation reaction. Briefly summarized, it consisted of: (1) the preparation of the material to be tested, (2) the process of obtaining the liquor, (3) the preparation of the diffusion tubes, (4) the test, (5) dialyzation, and (6) comparison with controls.

Pieces of muscle and fibrous tissue were boiled in distilled water for three minutes and the filtrate tested for substances reacting with ninhydrin and the biuret reaction. This was repeated until the filtrate failed to give a reaction with 1 ccm of ninhydrin on being boiled for one minute.

Schleicher and Schull No. 579 dialyzing tubes were used. These were first carefully tested to insure impermeability to albumin. Just before each test they were boiled for five minutes.

In the test small quantities of the liquor folliculi were introduced into the diffusion tubes together with small pieces of muscle, connective tissue, and ovarian tissue prepared as described, separate tubes being used for each test. A layer of xylene was placed upon the fluids in the dialyzer and without to prevent the growth of bacteria and evaporation.

Controls were made with amniotic fluid, normal saline, and cystic fluid in place of the liquor folliculi with exactly the same technique. The period of incubation was twenty-four hours in length and the temperature 38 degrees centigrade. The filtrate or the fluid surrounding the dialyzers was tested with ninhydrin and the biuret test.

The results of these determinations are tabulated as follows:

	Ovarian tissue	Muscle	Connective tissue
Liquor folliculi	+++++	++	++
Cystic fluid (small cysts in hog)	++	+	+
Amniotic fluid (human)	-	-	-
Normal saline	-	-	-

In experiments in ovarian transplantation small pieces of ovary were transplanted into the anterior chamber of the eye. The experimental animals were albino rats. The transplants were homoplastic grafts. The technique will be described in detail in a later report. In these experiments it was possible to watch the growth of the follicles. In the rat ovulation takes place twenty-four hours after parturition and usually every thirty days.

In one case in which the eye was removed after the follicles ruptured the sections showed free ova

clot or to superficial sloughing. He has never observed arterial bleeding in these cases. "Watchful waiting," he believes is the best policy to pursue as the bleeding may stop spontaneously. He inquires whether anyone has known or even heard of a case of fatal secondary hemorrhage following tonsillectomy.

OTTO M. RORR.

Randolph R.: The Treatment of Tuberculosis of the

Of the 103 cases of laryngeal tuberculosis treated at the Heidelberg Clinic during 1917-1918, 43 were treated surgically. In 19 this treatment was combined with X-ray therapy. Sixteen cases were treated with the X-ray alone. In far-advanced cases, in which there was great difficulty in swallowing, tube feeding was necessary.

In the 35 cases treated with the X-ray there was marked improvement in 12, among these being 4 cases in which no other local treatment of any kind was given. Thirteen cases were not examined subsequently. Ten cases of severe and extensive laryngeal tuberculosis with miliary tubercles in the mucosa were unimproved except that there was a decrease in the pain after treatment. A few cases

with X-ray treatment alone.

Friedberg, S. A.: Direct Laryngoscopy. *Ann. Otol., Rhinol., & Laryngol.*, 1920, xxix, 410.

Direct laryngoscopy is less difficult in the case of a frightened child than an attempt to use a mirror, and when with this method a general anæsthetic is used the epiglottis is held away from the laryngeal aperture so that a more extensive view is obtained.

Any laryngeal or tracheal condition of obscure or uncertain origin or development warrants a direct examination. Besides aiding in the diagnosis, the direct method facilitates operative procedures such as those for the removal of foreign bodies, papillomata, or intubation tubes which have been forced into the trachea in attempts at extraction.

Special care is necessary in cases of high-grade dyspnoea, uncompensated heart lesions, myocarditis, and extreme weakness. When the dyspnoea is very severe it is safer to do a tracheotomy before making the direct examination.

The picture obtained does not conform to that described in the text-books as all such descriptions are based on the image as it appears in the mirror.

The epiglottis in children is small, soft, difficult to hold, and easily displaced. Children should be examined in the recumbent position. Equal proficiency in introducing the speculum with either hand is of importance.

In examining for a foreign body in the larynx of an adult the patient should be placed in the recumbent position as there is then less danger of displacing the foreign body downward.

To avoid injury to the interior of the larynx and consequent edema the writer inserts the tip of the speculum between the base of the tongue and epiglottis. The upper lip is held out of the way and pressure on the teeth is avoided. The only lifting force of value is that directed against the displaceable soft parts.

SPENCER S. HOWE

Six cases of peritoneal and genital tuberculosis have been considerably improved. Four other patients have died of intercurrent disease. The increase in body-weight in the cases in which improvement has been obtained ranged from 2 to 26 pounds.

A. ZIMMERMANN (Z).

Gellhorn, G.: The Reactions of Syphilis in Women. *Am J Syphilis*, 1920, iv, 480.

Manifestations of syphilis differ in the two sexes. It is more difficult to demonstrate the initial lesion in women because of the complexity of the female genitalia which offers more chance for concealment of the chancre. In the female the initial lesion is apt to be smaller and less frequently indurated, and tends to clear up more rapidly than in the male.

The secondaries are usually more fleeting in women. Because of the absence of irritation from smoking mouth lesions are not as apt to be as prominent as in men. Fever and anæmia, however,

quent in women, symptoms of neurosyphilis may often be obscured by a superficial assumption of genital or climacteric ailments.

Attention is called to the frequency of lesions of the internal genitalia and the importance of determining before operation that an old cervical erosion is not a syphilitic manifestation. The similarities of gumma of the cervix and cancer also must be borne in mind. The author cites two cases incorrectly diagnosed as inoperable cancer which cleared up under antisyphilitic treatment. Cancerous lesions may begin on the basis of former syphilitic lesions.

The rôle of syphilis in obstetrics has been well studied. In the wake of syphilis miscarriage, stillbirth, and congenital syphilis frequently follow. Great responsibility devolves upon the obstetrician for the diagnosis and treatment of syphilis and for prenatal care.

Syphilis in women is an important factor in social medicine from the standpoint of marriage and prostitution.

"The symposium has emphasized these factors, that insidiously and in a thousand disguises syphilis may occur in all classes and categories of human pathology; that the aid of the laboratory is of the greatest and inestimable value in combating the disease; but that our diagnosis and treatment should be based first and foremost upon clinical study and observation of the syphilitic individual."

RÆ T. LA VAKE.

Culbertson, C.: The Management of General Pelvic Peritonitis. *Surg Clin. Chicago*, 1920, iv, 675.

During the acute stage of general pelvic peritonitis the patient should be put to bed and kept quiet. After the condition has remained afebrile for three weeks, and the acute pathologic process has subsided, operation is safer and the extirpation of

diseased tissues, if necessary, may become less radical. In rare instances the process may clear up entirely and an operation will not be needed.

The persistence of fever, or fever associated with chills, after a few days of rest in bed and quiet indicates that an abscess is developing or has developed. In such cases and when the posterior cul-de-sac is filled with a fluctuant mass, drainage should be established by a T-shaped posterior colpotomy. This Culbertson did in the case presented before the clinic.

Under light gas-oxygen anæsthesia the cervix was exposed, grasped with volsella, and pulled into view. The incision was made $\frac{1}{2}$ in. above and directly behind it and made T-shaped by splitting the vaginal wall posteriorly. Under the guidance of the finger, the distended tubes were opened with closed 8-in. curved forceps. A strip of gutta-percha was placed loosely in the cul-de-sac and vagina. The volsella were then removed, the cervix was allowed to drop back, and the patient put to bed. The drain was removed in twenty-four hours.

One month later the laparotomy was done. When the abdomen was opened it was found that the distal end of the ileum and the edge of the omentum were densely adherent across the lower portion. After the adhesions had been freed the walls of the ileum were found to be infiltrated and raw, but not perforated. The omentum and ileum were therefore pushed back beneath the laparotomy pack. The anterior cul-de-sac was obliterated by adhesions between the uterus and bladder. The diseased appendages and ligaments filled the pelvis laterally and posteriorly and the extensive infiltration invaded the rectum. The sigmoid was free but unusually short. The left ovary was three times its normal size and, with its tube, formed a common abscess. The right ovary was slightly enlarged, soft, and oedematous, but could be freed.

Culbertson prefers a bilateral pyosalpingectomy with defundation of the uterus in the treatment of such conditions in young women as this operation preserves menstruation. In the case reported,

ovary, and the corpus uteri *en masse* and destroyed the remaining cervical mucous membrane with the cautery at white heat. The latter step is very important in preventing subsequent leucorrhœa which sometimes is very troublesome.

The raw edges of the cervical stump were sutured together with the free ends of the round ligaments inserted between them and securely fastened by

on the necessity he abdomen. In great destruction

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Neck

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SURGERY OF THE CHEST

Chest Wall and Breast

Fractured ribs, emphysema, posterior dislocation of the right hip joint E L MOOREHEAD. Surg Clin Chicago, 1920, iv, 813

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Papillary cystadenoma of the breast in a child. GATEWOOD. Surg Clin Chicago, 1920, iv, 795.

Tuberculosis of the breast BERGLET and BOTTELHO.

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OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Elliott, J. H.: *Pregnancy and Tuberculosis. Canadian Pract. & Rev.*, 1920, xlv, 263

After a general discussion the author gives the following summary and conclusions:

1. Tuberculosis of the lung exerts practically no influence against conception.
2. It seems to exert little influence on the course of pregnancy and unless the patient is in a far-advanced stage of the disease has little or no tendency to cause abortion, miscarriage, or premature labor.
3. Pregnancy may prove a dangerous complication in tuberculosis of the lung, especially if the disease is active.
4. A woman with active tuberculosis of the lung should not marry.
5. A tuberculous woman should not become pregnant unless the lesion is limited and its active signs have been absent for a period of at least two years.
6. There are no rules by which it may be determined with certainty which case of tuberculosis will bear the added strain of pregnancy well and which will not. It is equally difficult to determine in what cases abortion will improve the future prospect of the pregnant woman. The treatment must be adapted to the requirements of the particular case.
7. Intervention after the fifth month of pregnancy rarely gives satisfactory results. Prior to the fourth month it is possible that the mother's future may be improved by emptying the uterus by the modern operation of vaginal hysterotomy under gas and ether anesthesia. By this procedure

The induction of premature labor two weeks before term may be advisable.

to

ment of tuberculosis must be strictly observed during pregnancy and the puerperium for at least six weeks after all evidence of pulmonary activity has subsided. The obstetrician and the internist should work in the closest cooperation.

11. A pregnant woman giving a history at all suggestive of pulmonary tuberculosis should be subjected to a thorough examination by a competent internist at the earliest possible date. Only in this way can the proper treatment be instituted at the time when it is most valuable.

CARL H. DAVIS.

Wallis, R. L. M.: *The Demonstration on the Diastase Content of the Urine in the Toxæmias of Pregnancy. Brit. M. J.*, 1920, ii, 273.

Although the presence of a starch-splitting enzyme in the urine has been known for a long time, it received new interest when, in 1909, Wohlgemuth

of observers, but the best and most complete work is that of Corbett. Corbett showed that a certain amount of diastase is normally present in the blood, and that the same quantity is excreted by the kidneys. The slightest damage to the renal epithelium leads to an increase or decrease of diastase in the urine, depending on the permeability of the kidney. Wohlgemuth and Noguchi found an increase of this substance in both blood and urine concurrent with injury to the pancreas.

In making his estimations the author uses Wohlgemuth's technique. Ten test tubes containing respectively 1, 0.5, 0.2, 0.1, 0.08, 0.06, 0.04, 0.02, 0.01 and 0.008 ccm of urine from a twenty-four hour specimen, freshly collected or preserved in toluol, are placed in a water bath at 39 degrees centigrade. Two cubic centimeters of 0.1 per cent starch solution in 0.5 per cent solution of sodium chloride are then added, and the mixture is stirred and allowed to stand for thirty minutes. At the end of that time it is cooled under tap water and two drops of a 1:50 normal iodine solution are added to

that free starch is present. The diastase in the urine is given in units. For example, if the red color, which is considered the limit test, is shown in the tube containing 0.1 ccm. of urine which has digested 2 ccm. of starch solution, the 2 ccm. of urine would digest 20 ccm. Expressed in diastase content, this is equal to 20 units. The normal value for healthy persons varies from 10 to 33 units and

Department follows.

A catheterized specimen of urine is examined for albumin, casts, and diastase content; analyses of the blood are made for urea, non-protein nitrogen, sugar, etc., and analyses of the cerebrospinal fluid for urea; McLean's urea concentration test is done; and a complete urinalysis on a standard diet is obtained.

In normal pregnancies albumin and casts are absent, the diastase content of the urine is normal, the blood urea varies from 0.02 to 0.05 per cent, and

Resection of the colon by the three-stage method
W Q WOOD Edinburgh M J, 1920, n s xxv, 106 [453]
Fifteen cases of intestinal resection for gangrenous
strangulated hernia O CIGNOZZI Polichin, Roma 1920,
xxvii sez chir, 221

Colostomy—a simple and inexpensive contrivance to
maintain perfect cleanliness A MACKINNON. Canadian
M Ass J, 1920, v, 710

Colostomy—artificial anus C J DRUECK Am Med,
1920, n s xv, 428

Rabbit shot in the appendix D L SPENCE Brit M.
J, 1920, n, 319

Clinical localization of the vermiform appendix A
ABRAMS Med Rec, 1920, xxviii, 229

Tuberculosis of the appendix GATEWOOD Surg Clin
Chicago, 1920, iv, 809

Gas gangrene of appendicular origin P CHUTRO
Semana méd, 1920, xxvii, 161

Pseudo-appendicitis and particularly the pathologic
picture of nervous spasms of the intestine E LACK. Mitt
a d Grenzgeb d Med u Chir, 1920, xxvii, 153

Appendicitis then and now J B DRAVOR Therap
Gas, 1920, n s xxvii, 533

Appendicitis, season and weather J DUBS Schweiz
med Wchnschr, 1920, i, 441

Appendicitis, hernia, and anorectal diseases of the
young soldier W H AXTELL Am J Surg, 1920, xxiv,
215 [453]

My personal opinion regarding diffuse peritonitis due to
acute appendicitis PASSERÓN Semana méd, 1920,
xxvii, 163

Causes of death after operation by acute appendicitis.
A MACCLAREN Ann Surg, 1920, lxxvii, 207.

Three years' experience of appendectomy G H
YOUNCE J Roy Army Med Corps, Lond, 1920, xxv,
103

A brief experience with appendectomy and caecostomy
for intestinal stasis in epilepsy and neurasthenia F W
WHITE Am J M Sc, 1920, clx, 109 [454]

Obstruction of the sigmoid with a palpable abdominal
mass E L MOORHEAD Surg Clin Chicago, 1920, iv,
821

The diagnosis of many of the acute abdominal
cases G. VARJAS

sez chir, 169

The surgical principles involved in the treatment of
rectal fistulae I C CHASE Texas State J M., 1920, xvi,
154 [454]

G. VARJAS

Surg Clin

Liver. Gall-Bladder, Pancreas, and Spleen

Experimental ligation of the hepatic artery, a prelim-
inary note M Behrend Surg, Gynec & Obst, 1920,
xxvii, 182

The biliverdin factor in liver lesions D. Brown and J. V.

xxvii, 208

Clinical notes on a case of hepatic abscess which ruptured
into a bronchus V M PÉREZ LERENA. Rev de med y
cirug de la Habana, 1920, xxv, 359

The diagnosis and treatment of liver injuries II
FINSTERER Beitr z klin Chir, 1920, cxix, 508. [455]

The relation between hydatid cysts of children and

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The author gives $1/6$ gr. of morphine and $1/133$ gr. of hyoscine hydrobromide. The morphine is not repeated.

It is generally believed that the injections should be begun when the pains have become strong and

of primiparæ, and at ten-minute intervals in the cases of multiparæ.

There is danger of asphyxiation of the child if the morphine is given within two and one-half or three hours of delivery.

The patient should be put into a quiet darkened room and her ears plugged with cotton. No conversation above a whisper should be allowed. It is advisable, in addition, to cover the eyes with light gauze.

To determine the degree of narcosis Gauss and Beach recommend the memory test but this has been found unreliable by most obstetricians. The co-ordination test of placing the finger to the nose is also not infallible as in some of the author's cases amnesia was obtained without loss of co-ordination.

In the cases of 1,179 primiparæ reported in the literature the average number of injections necessary was 6, while in those of 1,256 multiparæ it was 3.2. In the author's cases the corresponding average for 20 primiparæ was 4.8, and for 10 multiparæ, 4.6.

In the author's cases the duration of the first stage of labor was unaffected but the second stage was prolonged from one to four hours in the cases of primiparæ and slightly prolonged in the cases of multiparæ.

Mild restraint was required in 6.6 per cent of the author's cases.

Forceps were applied in 41.2 of 2,442 cases reported in the literature (16.8 per cent) and in 46 per cent of the author's cases.

In 5,205 cases reported in the literature the respiration of the child at birth was spontaneous in 4,053 cases (77.8 per cent). Light asphyxia was present in 16.9 per cent, and deep asphyxia in 0.87 per cent. The still-births in 4,812 cases numbered 244 (4.4 per cent). In the author's series 5 babies were born in oligopnoea and there was one still-birth in a case of contracted pelvis after thirty-six hours of labor. In the latter case no heart tones were heard twelve hours before delivery.

In the author's series there was 1 case of severe postpartum hæmorrhage.

In 2,395 cases reported in the literature amnesia was complete in 1,744 (72.8 per cent), partial in 14.9 per cent, and absent in 5.7 per cent. In the author's series amnesia was complete in 50 per cent, partial in 40 per cent, and absent in 10 per cent.

In the author's series the average duration of labor was 19.5 hours in the cases of primiparæ and 11.3 hours in the cases of multiparæ.

All writers agree that the method is safe for the mother. There were no maternal deaths in the author's series.

Successful twilight sleep demands constant supervision on the part of the obstetrician. The most important point to be borne in mind is that the morphine should not be administered later than three hours before delivery. The dosage must be regulated according to the patient's reaction and co-ordination tests. If the pains subside, from 2 to 4 m. of pituitrin will restore their vigor and frequency.

Twilight sleep is unsuitable in emergency conditions such as eclampsia, placenta prævia, or any condition precluding a natural birth. The author believes it ideal in borderline cases of pelvic contraction when it is desirable to give a test of labor. The method increases forceps operations from 8 to 10 per cent.

HAROLD K. GIBSON.

Zarate, E.: Subcutaneous Symphysiotomy in Argentina (La sinfisiotomía subcutánea en la Argentina). *Semana Méd.*, 1920, xvii, 449.

In the technique employed by Zarate the index and middle fingers of the left hand are introduced into the vagina in order to push back the urethra to the right side. The clitoris is then displaced downward to the arch of the arcuate ligament with the thumb of the same hand. With a double-edged bistoury, about 6 cm. long, the central point of the symphysis is perforated from above downward. The cutting edge of the bistoury is then carried downward to the arcuate ligament, which is protected by the thumb of the left hand, and the other half of the fibrocartilage is sectioned to the upper border. Assistants then gradually increase the abduction of the legs already flexed upon the abdomen until tension is placed upon the fibers of the arcuate ligament. The bistoury, still inserted, is then brought down upon these fibers and, if necessary, they are gradually sectioned. Slight hæmorrhage is controlled by compression with the fingers and thumb in the gap thus formed.

After the operative procedure the patient is given an injection of 1 cg. of pituitrin. Uterine contractions sufficient to bring about the engagement of the head usually begin within ten minutes and delivery is easily accomplished with the aid of Kristellar pressure.

Accidents and complications of the procedure are discussed as immediate and consecutive or late. Among immediate accidents are hæmorrhage, hæmatoma, wounding of the vagina, urethra, or bladder, and shock. Hæmorrhage may be controlled as a rule by pressure as already indicated. Wounds of the bladder, urethra, and vagina are exceptional and due usually to a defect in the technique.

Among consecutive complications are œdema of the labia majora, thrombophlebitis, and suppurative of the symphysis, all of which are rare. Still more rare are urinary incontinence and difficult micturition.

Franck's method is especially apt to produce lesions of the corpus cavernosum of the clitoris resulting in the formation of hæmatomata in about

Recent advances in tendon transplantation and bone grafting W G TURNER *Canadian M Ass. J.*, 1920, 2, 705.

Tendon transplantation and fixation for nerve injuries R F STANUAGE *J Roy Med Corps*, Lond, 1920, xxxv, 120.

Cartilage grafts MAUCLAIRE *Presse méd*, Par, 1920, xxviii, 545.

A contribution to the study of bone transplantation P A SARRIA *Prog de la clin*, Madrid, 1920, viii, 199 [462].

Transplantation of bone into aseptic and infected defects, a contribution to the induction of local immunity M KATZENSTEIN *Deutsche med Wchnschr*, 1920, xli, 240.

The Jones operation for the ankylosis of subdeltoid bursitis W BLANCHARD *J Orthop Surg*, 1920, n 3, 11, 466.

Resection of the elbow CHUTRO *Semana méd*, 1920, xv, 466.

Structure of the hand T MONTAGNA *Chirurgia*, 1920, vii, 248.

Limb amputation reduced to a minimum W A MCKINLEY *Internat J Surg*, 1920, xxviii, 249.

Cinematic amputations E W ROCKEY *Northwest Med*, 1920, xiv, 209.

Arthroplasty on the hip H MCKENNA *Surg. Clin Chicago*, 1920, iv, 749.

Conical stump of the leg E LLOYD, Jr *Ann Surg.*, 1920, lxxii, 379.

Some mechanical considerations in the surgery of the leg W. H. TRETOWAN. *Guy's Hosp. Gaz*, Lond, 1920, xxvii, 247, 268.

The treatment of bow-legs and knock-knees. C. A. PARKER. *Surg Clin Chicago*, 1920, iv, 705.

The treatment of knee-joint injuries at a home base hospital, with a comparison between the open and "ventil" drainage of synovitis suppurativa. EBERLE. *Arch. f. Klin. Chir.*, 1920, cxvii, 353.

The correction of congenital club-foot in infants. I. ZADEK. *J Am M Ass*, 1920, lxxv, 536. [463].

The treatment of a calcaneus fistula due to a gunshot injury by means of immunized skin R. WOLT. *Arch. f. Klin. Chir.*, 1920, cxvii, 753.

Orthopedics in General

Manifestations of rickets in school children. H. SUTTON. *Med J Australia*, 1920, ii, 190.

The mechanism of artificial joints W. V. SCHUTZ. *Arch f orthop u Unfall-Chir.*, 1920, xvii, 547.

Practical results with the freely movable artificial hand. F. SAUERBRUCH and A. STAMMER. *München med Wchnschr.*, 1920, lxxvii, 417.

Nerve lesions following common types of back strain and their relation to the prognosis of disability. H. W. WEAVER. *J Orthop Surg*, 1920, n. s. ii, 477.

The muscles and ligaments of the lumbar and pelvic regions, their mechanical arrangement and the treatment of their weaknesses H W MARSHALL. *Boston M. & S. J.*, 1920, clxxviii, 201. [464].

Objective symptomatology of foot strain A. H. FETTERBERG. *J. Am. M. Ass.*, 1920, lxxv, 466.

Kyphoscoliosis following tetanus. P. SRIEST. *Muenchen med Wchnschr.*, 1920, lxxvii, 283.

Chronic rheumatism of the spine. J. VASILEV. *Arch. f. Orthop. u. Unfallchir.*, 1920, xvii, 545. [464].

YANKA. *Arch. f. Orthop. u. Unfallchir.*, 1920, xvii, 210.

The diagnosis of spinal meningeal tumor R. T. WILLIAMSON. *Brit. M. J.*, 1920, ii, 275. [464].

A case of disease of the cauda equina. D. J. M. DEVILLARDE. *Siglo méd*, 1920, lxxvii, 565.

Two tumors of the cauda equina REIDICH. *Wien. med Wchnschr.*, 1920, lxx, 1261.

SURGERY OF THE SPINAL COLUMN AND CORD

SURGERY OF THE NERVOUS SYSTEM

MISCELLANEOUS

Clinical Entities—General Physiological Conditions.

Scurvy and its complications T. EHLER. *Canop. Med. Res.*, 1920, lix, 330, 351, 376.

Some surgical complications of dysentery P. J. M. LOVE. *Practitioner*, 1920, cv, 11. [465].

A few practical points regarding surgical tuberculosis H. HARRUNG. *Therap. d. Gegenw.*, 1920, lxi, 72.

Pneumococci in infantile surgery P. TANCO and PORTUGAL. *Med. Ibera*, 1920, xi, 37.

A case of gibbus syphiliticus A. WOLSHINSKY. *Deutsche med. Wchnschr.*, 1920, xli, 267.

Multiple hydatid cysts; the liver. E. G. ARZABALAGA. *Rev. med. d. Uruguay*, 1920, xvii, 213.

Filarioid cyst A. D. BEVAN. *Surg. Clin Chicago*, 1920, iv, 765.

Ten cases of histologic diagnosis of neoplasms not accessible to biopsy A. LÓPEZ-PÉREZ. *Rev. de med. y cirug. práct.*, 1920, lxxv, 401.

The production of tumors in the absence of parasites E. F. SATTER. *Arch. Dermat. & Syph.*, 1920, vi, 176.

be applied immediately following delivery to patients in whom infection is known or highly suspected. It would be useless, however, after the appearance of symptoms. Progressive sterilization would necessitate early treatment and many unnecessary intra-uterine operations. Excision would mean the performance of a hysterectomy at the end of every confinement in which infection was a possibility. No surety of defeating the cause of puerperal sepsis by the newer surgical methods is offered in the three procedures mentioned.

Bonney is frankly pessimistic as to the value of vaccines, but is of open mind as to the future progress in this form of therapy. Of the methods of treatment directed toward preventing the bacteria

has performed this operation most often in cases of post-abortion sepsis in which a definite thickening could be felt in the line of the ovario-uterine and ovario-pelvic ligaments. The whole tract from the side of the uterus up to the highest accessible point in the line of the ovarian vessels is generally removed. The possibility of extending this procedure to cases in which no definite thickening can be found in the presence of the other symptoms seems rational. Prevention is more to be relied on than cure. While the finding of the true antidote for puerperal sepsis is doubtless reserved for some laboratory worker of the future, prevention is in the hands of every obstetrician.

W. N. ROWLEY

MISCELLANEOUS

Williams, J. W.: The Significance of Syphilis in Prenatal Care and in the Causation of Fœtal Death. *N. York State J. M.*, 1920, xx, 252

The author's investigation was begun in April, 1916, and this paper is based upon a critical study of 302 fœtal deaths occurring in 4,000 consecutive deliveries between that period and December 31, 1916.

Wassermann test was made at the patient's first visit, and if the result was positive, proper treatment was given in the syphilis clinic if sufficient time was available before delivery. At the conclusion of labor a Wassermann test was carried out on the fœtal blood obtained from the maternal end of the umbilical cord. Every placenta was preserved and examined histologically, and if the child was born dead or died after delivery, every effort was made to obtain an autopsy in order to determine the cause of death accurately, particular attention being given to the recognition of syphilitic lesions and the demonstration of the presence of spirochetes.

Of the 4,000 patients, 1,830 were white women and 2,161 negroes. The incidence of positive Wassermann in the two classes was as 2.48 is to 16.29 per

cent. Therefore 1 in every 40 white women and 1 in every 6 colored women gave a positive reaction. It should be borne in mind, however, that this incidence does not exhaust the possibilities of syphilis as there were 105 additional women in the series whose Wassermann reactions were negative, but in whose histories some mention was made of syphilis. Forty-four of these women had presented a positive Wassermann in a previous pregnancy, but later gave a negative test following efficient treatment, with the result that the present pregnancy ended in the birth of a normal child. On the other hand, in the remaining 61 cases autopsy revealed the characteristic lesions and the presence of spirochetes in the fœtal tissues, the living child presented clinical evidence of hereditary syphilis, or the placenta showed characteristic syphilitic lesions.

Two hundred and twelve of the 302 dead babies came to autopsy. These included not only infants dying at the time of labor or during the two weeks immediately following it, but also those dying during pregnancy from the time of viability onward, namely, children weighing between 1,500 and 2,500 gm. or measuring between 35 and 45 cm. in length. Of the 302 deaths, 99 were those of white children and 203 those of negroes, an incidence of 5.4 and 9.4 per cent respectively. One hundred and fifty-seven deaths occurred at the time of labor or during the first two weeks of the puerperium, and 145 before term.

remainder the diagnosis was made from the presence of syphilitic lesions in the placenta and a positive Wassermann test on the part of the mother. The causes of death were as follows.

	Cases	Per cent
Syphilis	104	34.44
Dystocia	46	15.20
Prematurity	32	10.59
Toxæmia	35	11.55
Cause unknown	26	8.61
Placenta previa and premature labor		
Separation	16	5.28
Deformities	17	5.64
All other causes	32	10.60
	302	100.00

those who have had inefficient treatment consisting of from 4 to 6 injections of salvarsan and no after-treatment; and (3) those who have had satisfactory

A study of the antiseptic action of certain local anesthetics II. A study of the antiseptic action of benzyl alcohol and other local anesthetics against the gonococcus. E O SWARTZ J Urol, 1920, iv, 355.

The action of several anesthetic chlorides and their mixture with sodium bicarbonate upon the skin of the frog G PROTZ Arch f exper Path. u Pharmacol, 1920, lxxvi, 238.

Early changes following the injection of tubercle bacilli into the metaphysis of the long bones of animals J OLIVER J Exper M, 1920, xxii, 153.

A study of bacillus pyogenes. J H. BROWN and M L ORCUTT J Exper M, 1920, xxii, 210.

A new culture method for the gonococcus, report of experimental studies E O SWARTZ J Urol, 1920, iv, 325 [468]

On the kinetic and invasive power of regenerating tissue and on similarities in the behavior of thyroid transplants and carcinomata. L LOEB J Cancer Research, 1920 v, 261.

The glycaemic reaction in its relation to transplantable malignant tumors G L ROSENBERG. J Cancer Research, 1920, v, 270

Roentgenology and Radium Therapy

The X-ray as a means of differential diagnosis of tumors L SEITZ and H WITZ. Muenchen med. Wchnsch, 1920, lxxviii, 600

The radiotherapy of malignant tumors of the mouth and pharynx. M. SPINELLI Riforma med, 1920, xxvii, 585.

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Fiske prize dissertation No. LIX. Surgical lessons from the great war. A. G. RICE. Rhode Island M. J., 1920, viii, 139.

Oration in surgery. D. S. FAIRCHILD, JR. J. Iowa State M. Soc., 1920, x, 257.

W. NUZOM. Wis-

L. HUMPHREYS.

Industrial Surgery

spinal column II L LANGNECKER. California State J M, 1920, xviii, 301

Hospitals, Medical Education and History

Modern medical education C A BURRETT. J. Am. Inst Homoeop, 1920, xlii, 145.

A five or six years' course in medicine. J. A. KOLMER. J Am M Ass, 1920, lxxv, 360

The medical teacher K M LYNN. South M. J., 1920, xiii, 607

The use of the cautery among neolithic and later primitive peoples R. L. MOORE Surg Clin Chicago, 1920, iv, 851.

Legal Medicine

(Calif), 187 Pac R., p. 2

Whether fall or disease was proximate cause of death. Abbott vs Traveler's Insurance Co, Michigan Supreme Court, 176 N. W., p. 473

Admission of negligence admissible in evidence. Thorkehn vs Nicholson, Minnesota Supreme Court, 173 N. W., p. 1008.

Comparing roentgenograms of both knees. City of Terre Haute vs O'Neil (Ind.), 126 N. E. R., p. 26.

Evidence of malpractice—use of fracture basket Wojciechowski vs Coryell (Mo), S W R., p. 638

Ruptured aorta due to accident. E. Baggot Co. vs. Industrial Commission, Illinois Supreme Court, 123 N. E., p. 254.

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[471]

Privileged communications and waiver—Unethical practice. BAUCH vs SCHULZ (N. Y.), 180 N. Y. Supp., p. 183. [471]

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Lett, H.: Renal Calculus. *Practitioner*, 1920, cv, 81

The real danger of a renal calculus lies in its complications — hydronephrosis, pyonephrosis, perinephritic abscess, pyelonephritis, interstitial nephritis.

In discussing the classical symptoms Lett emphasizes the fact that they may not develop for a long time and then may appear on the opposite side. In his opinion colic followed by hæmaturia suggests calculus, while hæmaturia followed by colic may often be due to a malignant growth. He has seen cases of calculus mistaken for acute intestinal obstruction, ruptured ectopic pregnancy, and acute appendicitis. The dull pain of calculus between acute attacks of colic has often been attributed to chronic appendicitis.

To prevent recurrence the treatment given following the operative removal of a renal calculus is very important. The patient should not be allowed alcohol or acids, and should be given urinary antiseptics and large quantities of fluids.

In 50 consecutive operations for renal calculus reported by Lett there were 2 deaths, one that of a patient with anuria and the other that of a woman of 58 who suffered an acute exacerbation of a former colitis.

Lett believes the recent improvement in the results of operations of this type is due chiefly to the accurate study of what was until recently the unknown factor in the equation, i.e., the efficiency of the opposite kidney.

HENRY L. SANFORD.

Braasch, W. F.: Conditions Contra-Indicating Operation with Stone in the Kidney and Ureter. *Minnesota Med.*, 1920, lii, 387.

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months after the onset of the first symptoms, operation should be delayed for at least this length of time and perhaps for six months. An exception may be made, however, in cases of excessive pain, evidence of acute cortical or perinephritic infection, urinary retention sufficient to endanger the kidney, or stones too large to pass.

When the roentgenogram shows that the stone is

in the kidney substance and search may cause much

The urgency of operation may not be so great when the stone is located in the cortex or the end of the calyces as in these locations it may cause little damage to the kidney substance and will produce fewer symptoms than if it were located in the pelvis. X-ray examinations made at intervals which show a change in the position of the ureters are indicative of early passage. When the stone is situated in the bladder portion or projects into the bladder operation is rarely indicated.

Multiple stones usually indicate the necessity for

former should be removed and time should be allowed for the spontaneous passage of the latter if it is less than 2 cm. in diameter.

Clinical or laboratory evidence of low kidney function is usually a contra-indication to operation. When the symptoms are very acute, however, operation may be justifiable. Even when the phenol-sulphonephthalein test is as low as 20 per cent the condition may return almost to normal after the removal of a renal stone. When only a faint trace of this dye is returned and the blood-urea retention is high, operation is contra-indicated unless the symptoms are very urgent. When renal stones are associated with chronic nephritis their removal will have no effect on the primary nephritis, although

be determined as nephrectomy may be found necessary at operation. If the opposite kidney is functionless or absent, conservative surgery is essential.

Because of acute symptoms, operation for stone was necessary in five cases of polycystic kidney seen at the Mayo Clinic. As a rule, however, this condition contra-indicates surgery. In cases of polycystic kidney a study of the comparative renal function is absolutely indispensable.

Coincident diseases may contra-indicate or temporarily postpone operation. Among such conditions the most common are lesions of the alimentary

necessary in this condition before any other surgical procedure. Cardiac disease, unless compensated or moderately compensated, may prevent operation, especially in the aged. Hypertrophy of the prostate with residual urine must be attended to as usual after preliminary treatment or at least drainage of

Laparotomy for ruptured uterus, caesarean section in placenta previa J BYERS Brit M J, 1920, ii, 202

Double circle suture and peritonization in the conservative caesarean operation J VANVAERTS and H PAUCOT Gynec et obst, 1920, i, 320

Placenta praevia with expulsion of the placenta and retention of the fetus H F PLATERO Rev med d Uruguay, 1920, xxii, 361

Regarding compulsory notification of all cases of abortion (Editorial) Brazil-med, 1920 xxv, 530

A case of severe injury of the sigmoid in the induction of abortion. O SCHLUETER Zentralbl f Gynaek, 1920, xlv, 464

Demonstration on the diastase content of the urine in the toxemias of pregnancy R L M WALLIS Brit M J, 1920, ii, 273 [477]

The operative treatment of the toxemias of pregnancy J A MCGLENN Am J Surg, 1920, xxiv, 209

Perinicious vomiting, with a plea for the mother P E GARDNER J Iowa State M Soc, 1920, x, 273

Eclampsia—early diagnosis and treatment J A McNECKE Chesapeake M J, 1920, lvi, 603

ON J Michigan A P HEINECK

Med. Monthly, 1920, xlii, 120

Necrotic fibroids complicating pregnancy and the puerperum G W KOSMAK N York State J M, 1920, xx, 259

Labor and Its Complications

A plea for the rectal examination in labor D MONASH Illinois M J, 1920, xxxviii, 123

I. Gynaek, 1920, xlv, 600

Simplified scopolamine twilight sleep P W SIEGEL Zentralbl f Gynaek, 1920, xlv, 603 [479]

GENITO-URINARY SURGERY

Adrenal, Kidney, and Ureter

Renal malformations. G W WARREN Med Times, 1920, xlviii, 173

A curious case of error in renal diagnosis J A A ARIAS AVELLANAL Rev med y cirug de la Habana, 1920, xxv, 382

397

Renal tuberculosis complicated by inguinal renal fistula, transverse myelitis, and renal calculus. J D BARNEY and W J MYSTER J Urol, 1920, iv, 391.

TARATE. [479]
LINDE-

J. M.

1. TAYLOR Northwest Med, 1920, xlii, 211.

Two cases of true knots of the umbilical cord C. H. DAVIS Surg, Gynec & Obst, 1920, xxi, 199

Puerperium and Its Complications

Air emboli following metrorrhysis in normally placed placenta followed by recovery F LICHTENSTEIN. M. J. 1920, xlii, 199

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Conditions contra-indicating operation with stone in the kidney and ureter W. F. BRAASCH. Minnesota Med, 1920, iii, 387. [483]

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Kidd makes a plea for conservative treatment. He points out that stones lodged in the ureter may be passed naturally if left alone. He states, "Provided, then, that there are no imperative indications for operative interference, I think it advisable always to give the patient at least one to two years in which to pass a ureteric stone naturally, aiding nature by minor cystoscopic manipulative measures and employing flushing treatment and urinary antiseptics by the mouth."

The minor cystoscopic operations for the extraction of ureteral stone should be tried in most cases. These methods are: (1) the injection of sterile paroline through a ureteral catheter, (2) the use of papaverine injected into the ureter to reduce spasm, (3) the cutting and dilating of the ureteral orifice, as described by Bransford Lewis, or by cauterization, and subsequent withdrawal of the stone, and (4) the dilating of the ureter below the stone by means of a dilatable rubber bag on a ureteral catheter.

The author prefers the small muscle-splitting incision described by him in the *Lancet*, June 7, 1913, if open operation is to be done, as postoperative hernia are then avoided. GORDON S. FOULDS.

Peterson, R.: Uretero-Ureteral Anastomosis. *Surg. Gynec. & Obst.*, 1920, xvi, 132.

In the case reported the right ureter was divided

mucosa trimmed off for a short distance. The kidney end of the ureter was drawn into the distal end by a traction suture passed through the kidney end and then through the distal end $\frac{1}{2}$ in. below the angle of the anterior slit. At the point of entrance the two ends were sewed together with five fine silk sutures which included all of the coats except the mucosa. The slit portion of the distal end was united with three fine silk sutures. The ureter was then covered with pelvic peritoneum. Drainage was established through the vagina.

Eight months later ureteral catheterization showed a steady flow of urine from the right side suggesting dilatation and paralysis. The diagnosis was a minor degree of dilatation of the terminal calyces, pelvis, and ureter, with diminution of function.

The reports of 72 cases of uretero-ureteral anastomosis have been collected by the author from the literature. Each of these cases is analyzed. The primary mortality was 5.5 per cent. End-in-end or

A careful study of the literature shows that end-to-end, end-in-end, and end-to-side anastomoses are feasible.

A functioning kidney and ureter can be obtained with little or no ureteral stricture.

The primary mortality is small.

Leakage leads usually to stricture, hydro-ureter, and hydronephrosis.

Because it prevents leakage the invagination method is preferable to others.

End-to-end anastomosis is simple and uses only a small amount of the ureter.

Slight hydro-ureter and hydronephrosis follow.

CLAUDE D. PICKRELL.

BLADDER, URETHRA, AND PENIS

Nass " " " " " " " " " " " "

der organisch-chemischen Grossindustrie). *Frankfurt. Ztschr. f. Pathol.*, 1920, xxxii, 353.

The author, who was manager of an organic-chemical plant for twenty years, reports 32 cases of tumors of the bladder among the employees of the plant and 6 other cases which were referred to him. After reviewing the literature in which, to date, 67 cases have been described, he discusses the

probably inspired with the air. The time from the beginning of its absorption to the development of symptoms varies between twelve and twenty years.

calculation more easily.

In spite of various precautionary measures which have reduced the number of cases materially, employees in plants using anilin should not be permitted to remain exposed to it longer than three months.

WINZWARTER (Z).

Stutzin, J. J.: The Treatment of the Most Severe Strictures and Fistulae of the Male Urethra (Zur Behandlung der schwersten Strikturen und Fisteln der männlichen Harnroehre). *Therap. d. Gegenwart*, 1920, vi, 21.

For the most severe strictures of the male urethra the author recommends the internal or external urethral incision or the radical operation consisting of the excision of all scar tissue and circular union of the urethral stumps. The latter, however, is possible only if the defect is not greater than 3 cm. If after excision of the scar the defect is more than 3 cm. and union can be effected only by tension, a true urethrostomy uniting both ends to the skin is to be preferred. In such cases a retention catheter

Bovée.

The important points brought out in the paper are summarized as follows:

Uretero-ureteral anastomosis is not successful unless the kidney and ureter have been carefully followed and explored.

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SURGERY OF THE NOSE, THROAT, AND MOUTH

Nose

- Unrecognized foci of infection in the nose and throat W. G. SHERREY
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- The rôle of the tonsils in pulmonary tuberculosis. R. B. CANYFIELD
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Tardo, G. V.: *The Formation of Calculi about Foreign Bodies* (Sulla formazione di calcoli attorno a corpi estranei). *Polidinu*, Roma, 1920, xxvii, sez. chir., 225.

The author reviews the literature concerning the formation of urinary calculi and reports the results of experiments he carried out to determine whether such calculi can form about a foreign body introduced into the urinary tract.

In these experiments a nephrotomy was done on the anterior or posterior surface of the left kidney, a fragment of a sterilized urinary calculus obtained from a case of urinary lithiasis was introduced into the pelvis, and the wound then sutured without drainage.

At autopsy, which was performed from forty to one hundred days later on 10 dogs operated upon in the manner described, it was found that in 2 cases,

5 cases in which 2 fragments of calculus had been placed in the pelvis one of them was found in the pelvis and the other in the ureter.

In all instances the wounds had healed by first intention and no infection of any kind had been produced by the inserted calculus.

In no case was any kind of deposit found upon the introduced calculus. The fragments were the same in volume as when they were inserted.

In all instances more or less necrosis of the body. In 1 the ureter

were for volume in the c all. In

the pelvis. In 2 cases a large pedunculated papilla was found in the pelvis. In 1 case metaplasia and keratinization of the pelvic epithelium were discovered. In 3 cases the walls of the pelvis contained osteoid tissue.

From this experimental study Tardo draws the following conclusions:

1. The kidney of the dog constantly endeavors to expel fragments of calculus introduced into the

pelvis. The presence in the pelvis of fragments of a urinary calculus obtained from a case of urinary lithiasis was not sufficient under conditions of asepsis to cause the precipitation and deposit of the calcareous substances normally contained in the urine. These experimental data, in accord with data furnished by the clinic, show that a particular morbid disposition on the part of the renal parenchyma and super-saturation of urine are essential for the formation of calculi.

2. The fragments of urinary calculi introduced into the pelvis of the kidneys of animals of a species different from that in which they had been formed were slowly reduced in volume when, because of their chemical and structural composition, they were friable. The mechanical and chemical action occurred simultaneously. In all cases the pelvis and ureter hypertrophied and dilated in order to expel the calculus.

3. It was not possible to find precisely what anatomical changes occurred in the kidneys of dogs following the introduction of fragments of urinary calculi or to distinguish the lesions due to the nephrotomy from those due to the calculus.

4. A nephric perpendicular pelvis causes necrosis, calcification of the necrosed tracts of the cortex and pelvis, symptoms of acute interstitial nephritis, and the extensive production of connective tissue.

5. The connective tissue which invades necrotic and calcified zones of the pelvis sometimes undergoes metaplasia into osteoid tissue.

6. The irritation produced by a calculus may cause metaplasia and keratinization of the pelvic epithelium. The stimulated and proliferating epithelium gives rise to the formation of large papillae or even of cysts in the walls of the pelvis.

7. In dogs in which the drainage of the urine was obstructed by blocking of the ureter, atrophy of the kidney with absence of signs of dilatation and stasis

obstruction was incomplete.

WILLIAM A. BRENNAN.

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cornea from some other point. The author's evidence supports this view rather than the assumption that the granules in the corneal parenchyma are developed by the conversion of the free blood coloring matter in the anterior chamber to a combined state, or that they are formed in the cornea itself. The route by which the granules enter the cornea is still unknown.

The author further concludes that the presence of the characteristic granules is not necessary to complete the picture of blood infiltration and cites

ing of the cornea and the presence of granules may not be related at all. WILLIAM F. MONCREIFF.

Morax, V.: Cataract Operations on Glaucomatous Patients. *Am. J. Ophth.*, 1920, iii, 561.

Morax limits his discussion to cases in which senile cataract develops in eyes previously affected by glaucoma and in which an iridectomy or sclerectom-iridectomy has rendered the equilibrium of the ophthalmotonus satisfactory.

The indications for the removal of cataract are the same in these cases as in others, i.e., the more mature cataract should be extracted as soon as useful vision is lost.

Two cases are described. In the first, hyper-tension of the left eye of four years' duration was controlled by iridectomy. Within the next year, however, the lens of this eye began to become opaque, and a cataract extraction was done six years after the iridectomy. A good result was obtained as the scleral section left a small filtering scar and the tension has remained within normal limits. The visual acuity with correction of aphacia is one-third.

In the second case sclerectom-iridectomy on the left eye was done three times before a satisfactory filtering scar was obtained. Peripheral opacities in the

que that extraction was necessary. In this operation the incision was placed outside the filtering scar so as not to destroy it. The filtering scar ceased to function, however, and the tension rose in spite of miotic treatment. Another sclerectom-iridectomy was then done, but a filtering scar was not obtained and within a year vision was lost. WILLIAM F. MONCREIFF.

Gou

Proc. Roy. Soc. Med., 1920, 13, 100. *Am. Soc. Ophth.*, 67.

The author first points out the dangers of allowing a prolapsed iris to heal spontaneously. The treatment must be based on the position of the corneal wound.

If the wound is situated entirely in the cornea or at the limbus, Goulden makes a preliminary incision with a keratome at the limbus on the opposite side of the cornea. Then, by very gentle traction throughout the entire length of the prolapse, he frees the iris so that when it is cut off the rest of it will spring back into the anterior chamber. If the wound is more than twenty-four hours old a stream of warm saline solution is necessary during this procedure to clear away the exudate. The prolapsed iris is cut off close to the cornea with a DeWecker scissors. The repositor is then introduced through the incision made with the keratome and the pillars of the coloboma are replaced.

When the sclera also is involved the wound of the conjunctiva is exposed freely and the conjunctiva undermined on each side. The edges of the wound are then held open by an assistant while the operator deals with the prolapsed uveal tissues. The conjunctiva is brought together in layers, one edge being folded under the other. This procedure approximates the edges of the sclera with the least possible trauma.

When the wound extends across the cornea and through the limbus on each side, the eye should be enucleated at once. If an attempt is made to save the eye, the wound must be thoroughly covered with conjunctiva. "The conjunctiva should be detached from the periphery of the cornea in about its lower third or over one-half, and drawn straight across the cornea and sutured to the opposite limbus. Such sutures will hold for from five to seven days, and when they break loose the conjunctiva will have become thoroughly adherent to the site of the injury."

To remove a non-magnetic foreign body from the anterior chamber Goulden makes a keratome incision in the cornea 3 mm. inside the limbus as near the foreign body as possible, driving the point of the keratome directly toward it. He then seizes the foreign body with toothless iris forceps and withdraws it. He claims this method is much easier than making the incision at the limbus.

THOMAS D. ALLEN.

EAR

Vail, H. H.: Studies of the Barany Rotation and Caloric Tests of Tumors of the Nervus Acusticus. *Laryngoscope*, 1920, xxx, 505.

The author records the findings obtained in ten cases of verified unilateral tumor of the eighth nerve by the Barany rotation and caloric tests. In the majority of the cases the reactions were typical.

Unilateral deafness on the side of the lesion varied from absolute to marked involvement.

In the caloric test there was failure to obtain alter-nystagmus and past-pointing by stimulation of the labyrinth on the side of the lesion and in some cases to obtain after-nystagmus and past-pointing by stimulation of vertical canals on the side opposite the lesion.

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SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Armstrong, M.: The Clinical Significance of the Bacteriological Examination of the Accessory Nasal Sinuses and the Ears. *J. Iowa State M. Soc.*, 1920, x, 209

Of 45 cases in which there were no symptoms or local lesions other than those of chronic tonsillitis and adenoids, the X-ray findings were negative and the washings contained neither pus nor mucus, 70 per cent were sterile and in the other 30 per cent

lar except for the fact that the antra appeared blurred in the X-ray picture, 80 per cent were sterile, and in the other 20 per cent no virulent organisms were present. In 3 cases the only indication of sinus trouble was pus and mucus in the antrum. In 1 of these cases the cultures were sterile and in the others contained only such organisms as are normally found in the nose. In the author's opinion it is probable that the secretions had been in the antrum since a recent coryza and were doing little or no harm. In 12 cases of chronic arthritis the sinuses were found to be sterile in 2 (16 per cent). The hemolytic streptococcus was the only organism in 1 case and in 8 others was discovered with other organisms, making 9 cases (75 per cent of the total number) in which it was found.

It is the consensus of opinion that the presence

contra-indicate it.

OTTO M. ROTT.

THROAT

Salzman, S. R.: Tonsil Infections. *Med Rec*, 1920, xcvi, 85

Too much importance cannot be attached to the tonsils as foci of infection. In the author's opinion

to tonsillar infection:

Some of the conditions mentioned are. (1) attacks of fever (febricula?) with no other

and (9) many skin conditions.

OTTO M. ROTT.

Canfield, R. B.: The Role of the Tonsils in Pulmonary Tuberculosis. *J. Michigan State M. Soc.*, 1920, xix, 415.

The combined statistics of many pathologists show the incidence of tonsillar tuberculosis to be about 4 per cent, and in one series of 200 cases examined clinical manifestations of the disease were present only in 4. While the latent type may be the result of either primary or secondary infection, the manifest form is usually an evidence of secondary invasion, the 4 cases mentioned all showing extensive pulmonary involvement.

The frequent occurrence of bone, joint, and skin tuberculosis can be accounted for only by the assumption that it is due to hematogenous metastasis. The author reports a case of diffuse tubercles which covered the entire surface of the body and cleared up within four weeks after the removal of hypertrophied tuberculous tonsils.

The generally accepted theory that tuberculosis may be spread by lymphogenous dissemination from the tonsils to the hilus and then to the parenchyma of the lung does not satisfactorily explain the frequency of apical lesions. Stereoscopic X-ray examinations have shown a distinct thickening of the extreme apex of the lung, termed "apical pleural cap," and the presence of this condition in the absence of frank pulmonary tuberculosis, but in association with tonsillar and glandular tuberculosis suggests a direct lymphatic drainage from above to the pleura. This assumption is substantiated also by the experiments of Grober who injected Chinese ink into the tonsils of dogs and six months later was able to trace the dye in the deep cervical lymphatics and from there directly into the apical pleura and the parenchyma of the lung.

SPENCER S. HOWE.

McKinney, R.: Tonsillectomy in the Adult under Local Anæsthesia by the Sluder Method. *Laryngoscope*, 1920, xxx, 429

McKinney claims that he obtains successful results with the Sluder technique under local anæsthesia in 99 per cent of tonsillectomies performed on adults. His one failure occurred in the case of a short-necked man 54 years of age. This patient had had a number of attacks of peritonsillar abscess and tonsillitis. His tonsils were of the elongated flat type and so firmly embedded in connective tissue that it was impossible to strip one of them through the r

McKinney instrument.

in any of his cases at the time of operation, but in several a secondary hemorrhage came on from two to seven days later. Such hemorrhages he ascribes to localized sepsis having its origin beneath a blood

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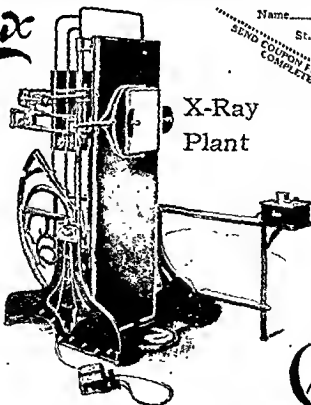
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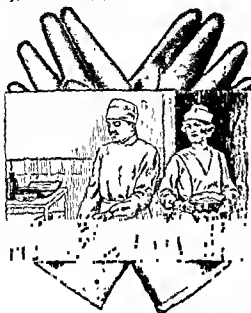
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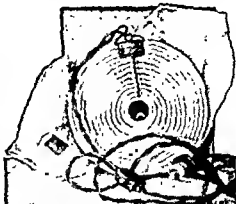
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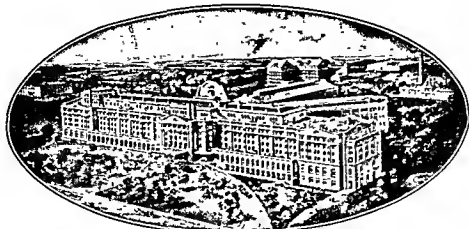
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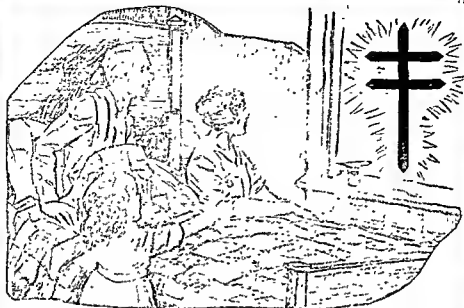
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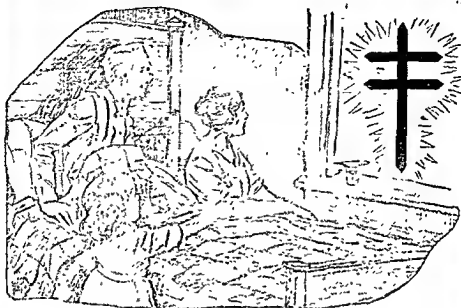
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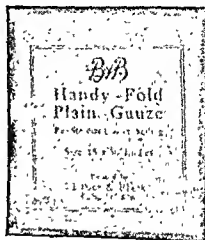
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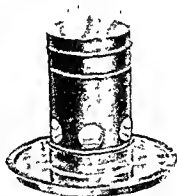
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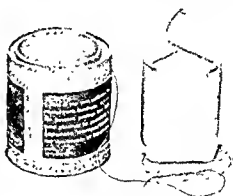
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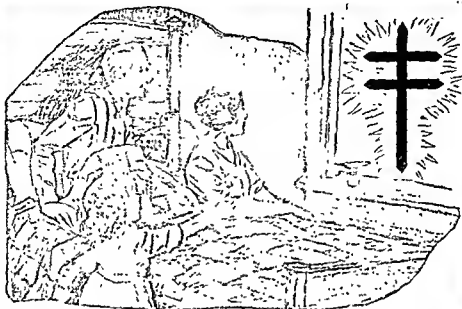


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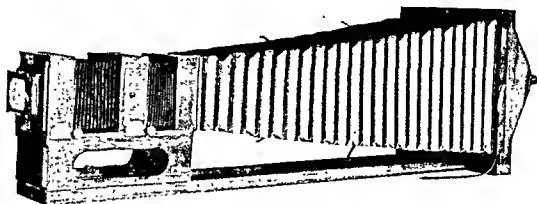


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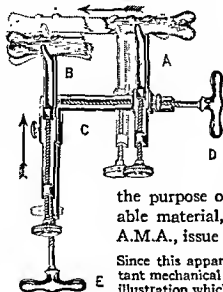
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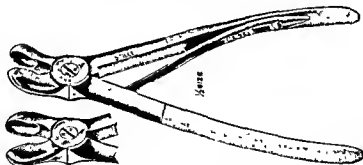
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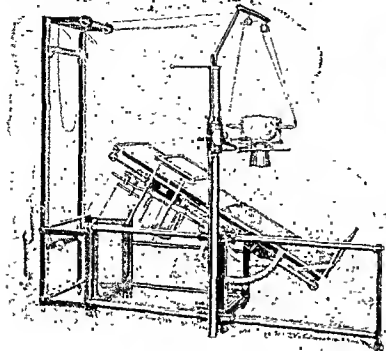
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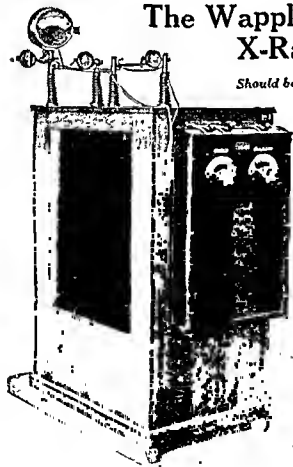
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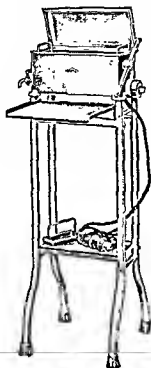
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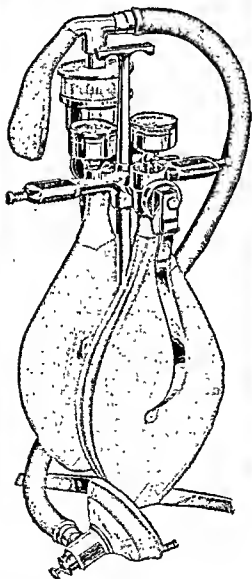
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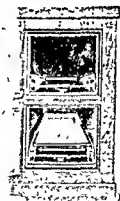
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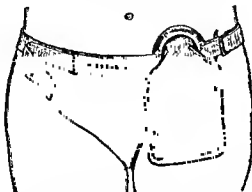
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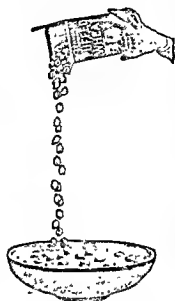
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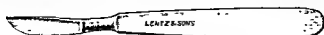
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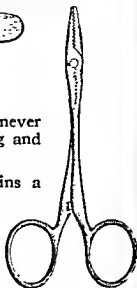
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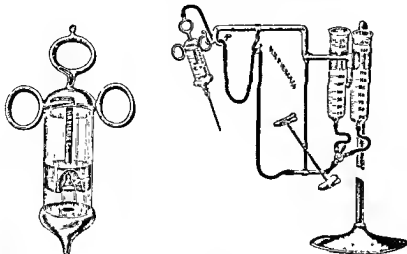
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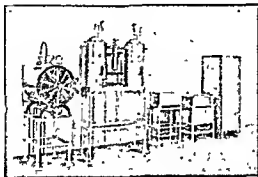
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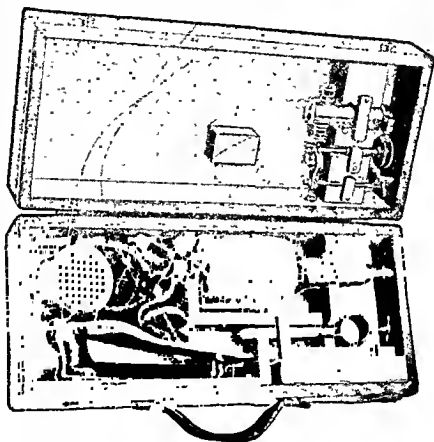
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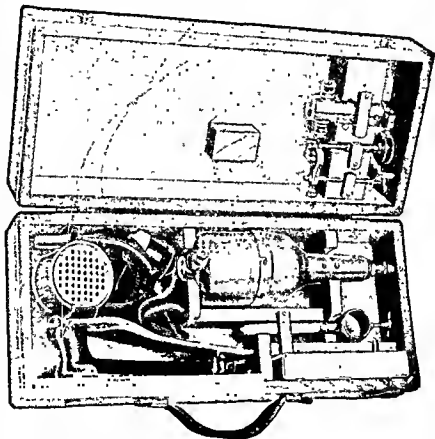
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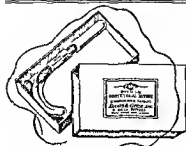
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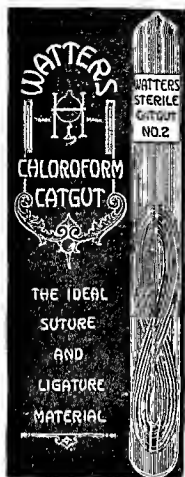
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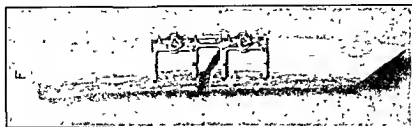
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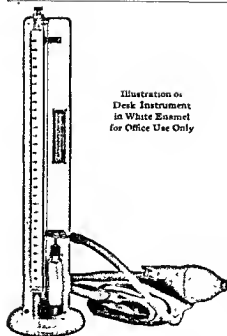


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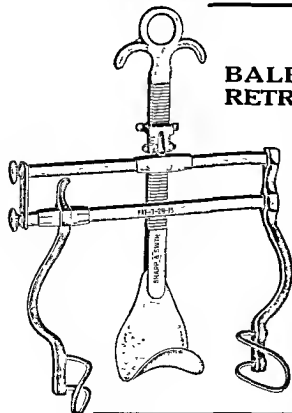
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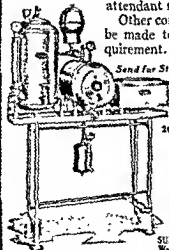
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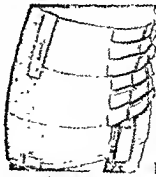
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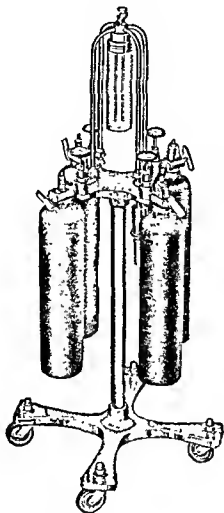
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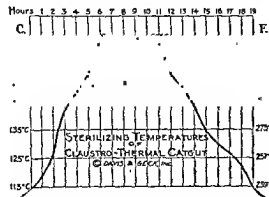
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PLATE I

FIG 1 Cystoscopic view of right portion of bladder looking toward the trigone and showing vegetating syphiloma. The points of the papillae are arranged in peaks and have a silvery gray color.

FIG 2 Cystoscopic view of left portion of bladder, same case, looking toward the trigone.



PLATE II

FIG 1 Cystoscopic view of right portion of bladder looking toward the trigone and showing vegetating syphiloma of the bladder two weeks after continuous treatment. Ureters opening plainly visible in crater-like mass.

FIG 2 Cystoscopic view of left portion of bladder looking toward the trigone.

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distinguished. The lateral portions of the bladder appeared approximately normal, there being only the evidence of a mild cystitis.

Cystoscopy was repeated at which time we both examined the patient. We were in doubt whether

the presence of a specific infection. Extensive

almost 1 centimeter in thickness, stiff, and of a pearly grey color on cross section. The cavity of the bladder was smaller than normal, and its base was occupied by a growth which, on direct inspection, did not appear definitely malignant. A small bit of tissue was secured for section which was examined by Dr Gladys Dick. She reported that, while the specimen had been somewhat injured by drying before she received it, none of the sections made by her showed malignancy but merely appeared to be necrotic material.

It was then decided to place the patient upon active specific treatment which was done by one of us (C), who gave her salvarsan intravenously nine times. She immediately began to improve, and cystoscopy, after the wound had nearly closed, showed a marked regression of the growth at the base of the bladder, the distinguishing characteristics of which, however, were still plainly evident.

Figures 1 and 2, Plate I show the growth as it appeared at this time. Two weeks later the blad-

condition was very greatly improved, and she was gaining rapidly in weight.

Syphilitic lesions of the bladder have not been adequately discussed in the literature. During the period from 1551 to 1767, there is almost complete obscurity although occasionally observations are cited where lesions of this character were discovered at autopsy in individuals dying on account of urinary lesions. During the period from 1872 to 1900 numerous cases of bladder tumors due to syphilis were diagnosed by the therapeutic method; that is, if the symptoms disappeared under treatment it was pronounced syphilitic.

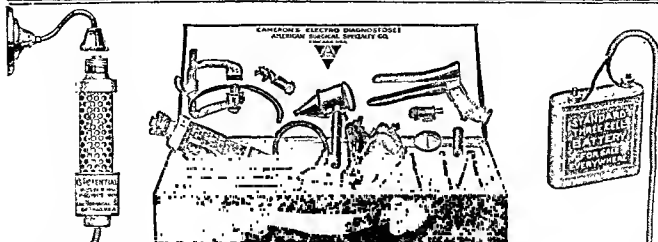
Since 1900 great progress has been made in diagnosing bladder lesions because of the

development of the cystoscope. During the same period has been added the Wassermann reaction, a strong supporting evidence in diagnosing these lesions.

So far as we are able to learn, the first dissertation on syphilis of the bladder which has been printed in the English language appears in Cabot's *Modern Urology*, in the chapter on syphilis, which was written by one of us (C). Since that time a number of reports have appeared, and recently Lloyd Thompson in the *American Journal of Syphilis* has reported all the cases up to date, which number 52.

As the case above reported shows that a syphilitic lesion may cause a growth in the bladder which produces all of the symptoms and appearance of a tumor, it would appear to be justifiable to add to the very extensive classification originally proposed by Kuester and Albarran and which Geraghty tells us is almost universally accepted, a new division under the head of granuloma or tumors of infective origin. Under this heading should appear condyloma, the lesion of secondary lues, and gumma, the lesion of tertiary lues. The classification would then appear as follows:

- I. Neoplasm
 1. Tumors of connective tissue origin
 - a. Benign
 - Fibroma
 - Myoma
 - Fibromyoma
 - Angioma
 - Rhabdomyoma
 - Myxoma
 - Chondroma
 - b. Malignant
 - Sarcoma
 2. Tumors of epithelial origin
 - a. Benign
 - Adenoma
 - Papilloma
 - Cystic tumors
 - b. Malignant
 - Carcinoma
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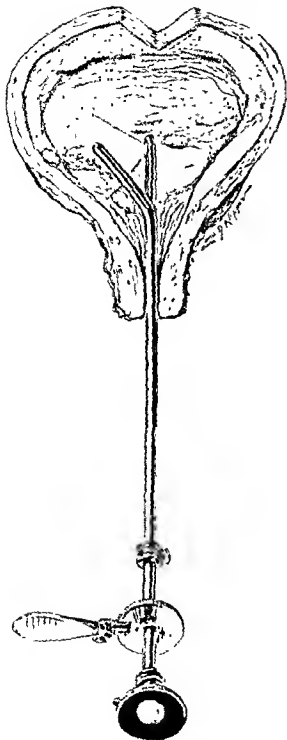
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the later periods of life, the time when malignancy generally occurs, a differential diagnosis is important. In arriving at a differential diagnosis one should consider the age of the patient, the history, and the possibility of specific infection.

In this connection it should not be forgotten that carcinoma may co-exist with lues and the presence of a positive Wassermann reaction therefore is not necessarily conclusive. If possible, tissue should be secured by the operating cystoscope, or, should a cystotomy be made, and the diagnosis still be in doubt, tissue may be taken for microscopic study.

The cases of neoplasms of the bladder which we wish to record are as follows:

CASE 2. Married woman, age 36 Referred to one of us (C) by Dr. M. H. Mack.

Family history. The patient is the second child in a family of five children, two boys and three girls. The father died of pneumonia, at the age of 56. The mother died of paralysis, following an accident, at the age of 57. A brother, 2 years older than the patient, died after an operation for complete obstruction of the bowels, when 34 years old. The other brother, 19 months younger than the patient, died of measles, when 2 years and 6 months. Two sisters, aged 25 and 37, are living. All grandparents lived to be 70 years or more.

Present illness. About 14 months ago the patient began to notice that it was difficult and painful to urinate, especially at night several minutes were required to empty the bladder. She neglected to consult a physician until about the middle of April,

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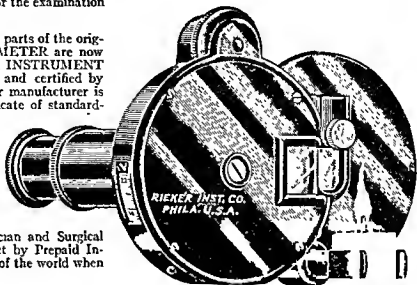
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entirely gone. The patient is now actively engaged in his usual occupation but is to be kept under observation.

CASE 5. Man, age 26, was referred to one of us (C), for cystoscopic examination on account of hæmorrhage. The previous history is negative.

Cystoscopic examination revealed a raspberry-like papillomatous growth just outside of the left ureteral orifice, on the side of the bladder wall. This was fulgurated five times with prompt disappearance. This was 4 years ago. There has been no recurrence. No radium treatment was given.

CASE 6. Woman, age 73, housewife, mother of five children, living and well. The family history is negative. The patient was referred to one of us (C) for cystoscopy on account of severe bladder hæmorrhage.

Examination showed an elderly woman in apparently good health, with marked anemia. The patient stated that up to present time, for a woman of her age, she had enjoyed good health.

Present illness. About one week previously without any premonitory symptoms the patient suddenly had a severe hæmorrhage from the bladder. The blood was terminal and red. Hæmorrhage stopped as suddenly as it came. In a few days this was followed by another attack, but not so severe. Except for a general feeling of lassitude, there were no other symptoms.

She is now 77 years of age and her daughter says until the last few weeks she has enjoyed splendid health. At present there is some bladder irritation. Patient refuses further examination.

CASE 7. Widow, age 65. Referred to one of us (D) for hæmaturia.

Previous history. The periods ceased 5 years ago. The patient has had three children, ages 16 to 30, labors normal. She had no illnesses. One year ago she went to a physician, her statement of her reason for doing so being indefinite. She had a laparotomy, the exact nature of which she cannot explain but says that her appendix was removed and "bladder was supported." One year ago she began to have very frequent urination with blood in the urine and the urination later becoming painful. This has continued up to the present. Pain is more severe at times and the urine is frequently very red.

General examination shows a pale, poorly nourished, thin woman. The abdomen is negative except for a median scar. Neither kidney is palpable. Vagina, very marked rectocele, anterior wall thickened, infiltrated and indurated, mobility very greatly decreased. The external meatus is very reddened. The cervix shows a large, bilateral lacera-

tion. No other pathology is found; no other discharge. The uterus is anteverted, of normal size and movable. The urine is very turbid, the microscopic field is crowded with red cells and leucocytes.

Cystoscopic examination, September 12, showed the fundus and lateral walls of the bladder normal. The base of the bladder shows a large area, the center of which is sloughing and bleeding. The edges are raised and have a cauliflower-like appearance. The ureteral orifices could not be seen.

Intensive X-ray treatments were given by the radiologist of the Evanston Hospital, the lower abdomen being mapped off in areas and treated systematically. Subsequently radium was applied inside the bladder by means of a cystoscopic applicator, 50 milligrams being used and allowed to remain from 6 to 12 hours. Five such treatments were given. The hæmorrhage stopped soon after the beginning of X-ray treatments. The patient's

stopped and the growth had decreased in size. After this the patient refused to submit to any cystoscopic examination and only with difficulty could she be induced to allow the application of radium.

HÆMATURIA

While it is not our intention to go extensively into the symptomatology of these growths, we would like to call attention to the fact that every one of our cases first announced its presence by hæmaturia. This agrees with the statement of Kelly and Burnham that the cardinal symptom is hæmorrhage, first at intervals extending perhaps over months, later increasing in amount until in some cases it may become constant and profuse.

It cannot be too strongly emphasized that hæmorrhage from the bladder calls for immediate investigation by means of the cystoscope. Cystoscopy should be done with great care, as careless instrumentation may increase bleeding.

Pyuria is also frequent. A pedunculated tumor which may chance to be situated so that it may fall over the internal urethral orifice may thus cause an intermittent stoppage of urine. An instance of this sort came under the observation of one of us (D) a number of years ago.

Our treatment of the cases herein reported, excluding the luetic growth which has disappeared under specific treatment, has been as follows:



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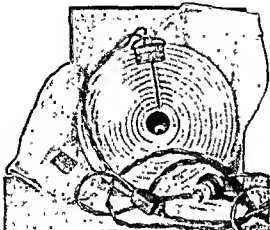
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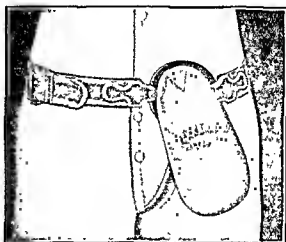


Fig. 130—Apparatus, Colostomy, Feick

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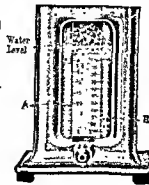
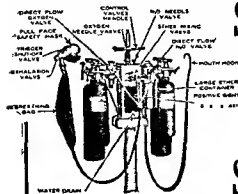
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shows the appearance of the instrument and mode of application. We have applied 50 milligrams at a time, using a screening of 0.5 millimeter of silver and 1.0 millimeter of brass, covered by thin rubber and have allowed the applicator to remain in contact with the growth from 6 to 12 hours. In a great majority of instances the applications have lasted 12 hours.

One may also radiate bladder tumors rectally or vaginally by placing the desired amount of radium in a Kelly open cystoscope, a portion of the barrel of which has been removed. The closed side may be fortified by sheet lead to protect the rectal or vaginal mucosa, and the whole enveloped in sheet rubber as suggested by Willis, for treatment of malignant growths of the prostate.

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ating for

carcinoma of the breast

We would urge the importance of making use of this form of treatment after the removal of every neoplasm of the bladder and in view of the indefiniteness of the dividing line between non-malignant papilloma of the bladder and similar growths of a malignant

character, we would suggest its advisability after every fulguration for papilloma.

Attention has also been drawn by Kolischer to the disappearance of several tumors after the application of radium to one. This was illustrated in our Case 2. Whether it is caused by a ferment acting through the blood stream developed as a result of the application of radium to the large tumor or on account of the distant effect of the radium-rays we are not able to state.

In conclusion we would emphasize the necessity of remembering that syphilitic growths may very closely simulate carcinoma and that careful observation may be needed to distinguish between them. We also wish particularly to call attention to the value of radiotherapy as an adjunct to operative measures.

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Its manifestations are not likely to be confused with the deep-seated subcutaneous nodules of a syphiloma situated between or upon the labia. As was recently pointed out by Thorn (21), syphilis may exactly simulate cancer in any location, either of the viscera or on the surface of the body. The microscopical findings, however, will definitely establish the existence of malignant disease.

The great majority of vulvar indurations, including those in which no tubercular or malignant origin is demonstrable, should in future be charged to syphilis and a suitable descriptive terminology be adopted. The names of tertiary vulvar syphilide, syphilitic ulcerative induration of the vulva, or syphiloma vulvæ, are in conformity with recent additions to our knowledge of this disease, which has puzzled several generations of investigators, although it was long ago recognized and described by Fournier (6) as well as by a number of German writers and by J. N. Hyde (12) and R. W. Taylor (20) in this country.

Prior to the publication of Huguer (10 and 11), in 1849, who pronounced the disease to be a form of tuberculosis, emphasizing the similarity of diseases of the vulvo-anal region with those of the face, a view which has ever since persisted and recurred in the literature, certain cases of so-called vulvar esthiomène had been correctly referred to syphilis, although cancer and elephantiasis were also regarded as responsible for the proliferation by the old writers. (The term elephantiasis vulvæ as applied to these cases is wrong. It should be named pseudo-elephantiasis, a condition which simulates true elephantiasis, a disease of an altogether different etiology.)

The great French writer on syphilis, A. Fournier, whose clinical knowledge of that disease far surpassed not only that of his contemporaries but also that of writers of a much later date, gave an excellent description, in 1873, of this vulvar syphiloma which he depicted as "composed of uniform, smooth, slightly protuberant surface lesions, pinkish

or reddish in color, dry, and covered with a slight desquamation." He emphasized that these "surface lesions are not the result of fusion of several neighboring papules but are originally formed by a papular neoplasm spreading over a large surface. The changes are of variable extent, sometimes occupying only one of the labia majora entirely or in part, or both labia majora may be involved together. Frequently the lesions encroach on the neighboring regions, on the genito-urinary folds, the perineum, the thighs and the mons veneris." It is noteworthy, he said, that they determine not only a considerable swelling of the affected parts but also invest these parts with a very peculiar resistance and elasticity. A diseased labium majus for example is not only increased in size but both hypertrophied and indurated. Digital examination reveals a specific dry hardness without œdema which does not yield to pressure but is resistant like sclerema. I . . . affected lab . . . lined with

experienced on touching the tumor is altogether unique.

Fournier's diffuse hypertrophic syphiloma of the vulva is commented upon as follows by Abraham (1) in *A System of Syphilis*, published in 1914: "This consists in a massive infiltration of one or more parts of the vulva which may become generalized over the whole of its extent. This infiltration is of a stony hardness and may alter entirely the conformation of the parts so as to make the original structure absolutely unrecognizable." The enormous tissue destruction which is a pathognomonic feature of lues is the result of preponderance of the necrotic process over the tendency to fibrosis and contraction of scar tissue. Moreover, the peculiar combination of hypertrophy and ulceration is plainly indicative of lues.

Syphilis was recognized as the most probable causative factor by Grace Peckham (16) who in 1900 . . .

The above translations carefully follow the originals and are given here because these lines although written nearly fifty years ago perfectly describe the disease loosely known as vulvar esthiomène and still ascribed to a variety of other causes.

1 still further augmented by modern diagnostic methods for the recognition of lues.



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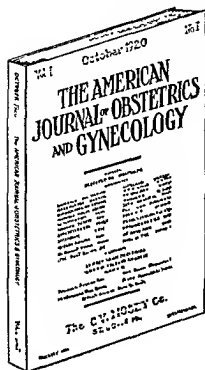
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Fig. 4 Photomicrograph of specimen, Case 1

vasion of the urethral orifice and urethra causing painful micturition or by perineal infiltration with anorectal involvement resulting in painful, sometimes bloody, stools, the patients, as shown by my personal observations, and the cases recently reported by Gallagher and numerous others scattered through the literature, are remarkably free from pain or other subjective symptoms

TREATMENT

As shown by my personal findings and the above quoted observations of other writers the treatment of syphiloma vulvæ is both surgical and medical. Operative interference consists of excision and destructive cauterization of all tumors and excrescences. This radical procedure is usually effective and

not followed by a recurrence of the condition. Intravenous injections of salvarsan are an essential supplement of the surgical treatment. The prognosis is very favorable as is to be expected in properly treated gummatous changes of tertiary syphilis.

The following two cases came under my observation at Harlem Hospital, New York City (Service of Dr. I. Haynes), where they were treated simultaneously (Histories Nos. 639 and 691).

CASE 1. L. V., colored, single, age 20 years, admitted to the hospital May 5, 1919. The family history as well as previous personal history is negative. Menstrual periods began at 13 years, occur regularly every 28 days, and last 3 days. She has had no miscarriages and no confinements.

Present history. About a year ago the patient noticed a small swelling at her outer genitals. This swelling increased steadily in size and 3 months

the development of a rather large tumor which hangs from the outer genitals between the thighs.

General examination. The patient is a well developed woman in good general condition. The abdomen is negative. The skin, lips, mouth, throat, and glands all fail to show any signs of luetic infection.

Local examination. Due to the fact that internal

two fingers. The greater part of the hymen is destroyed. There is a large ulcer on the lower third of the posterior vaginal wall. This ulcer is hard in consistency and shows infiltrated walls covered with a dirty purulent matter. The uterus and adnexa are found to be perfectly normal.

The general appearance of the vulva is as follows (see Figures 1, 2, and 3): The affection of the outer genitals can be divided into two parts, namely one large tumor originating in the right labium minus and two marked indurative processes affecting both labia majora. The tumor of the right labium minus measures three and a quarter

surface whereas on its lower surface near the pedicle it presents deeply ulcerated areas. The left labium minus is very hard, parchment-like, sausage-shaped, nearly two inches long, indurated but showing no ulcerative areas.

The right labium majus is transformed into a sausage-shaped mass three and a half inches long.

SURGICAL DIAGNOSIS AND TREATMENT

EDITED BY

ALBERT J. OCHSNER, M.D., F.A.C.S.

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Figs 6 and 7 Case 2 Syphiloma of the vulva

but as before, she left the hospital without being completely cured.

CASE 2 J. C., colored, married, age 22 years, admitted to the hospital May 19, 1919.

The family history as well as previous personal history is negative. Menstruation began at 13 years of age, is regular every 28 days, and lasts 4 days. Last period May 11. No miscarriages. One normal confinement.

Present history. The patient states that a painless growth started in the vulvar region about 2 years ago and that this growth has gradually become larger and larger, never causing any pain however, except for an occasional burning sensation on urination. Upon further examination the patient admits that several years ago her husband contracted a "cold" of the genital organs.

General examination. Her general appearance is

Local examination. The right labium minus is transformed into a hard, indurated tumor about the size of a lemon. The tumor involves the entire right labium minus. The left labium minus shows a similar tumor of the same make-up but somewhat smaller. Upon pushing the two tumors upward toward the abdomen an ulcerative area involving the entire lower surface of both tumors as well as that of the clitoris is seen. The latter seems to be entirely absorbed in the ulcerative area (Figs 6 and 7).

The labia majora are somewhat indurated although not to any such extent as in the first de-

All of the above described ulcers are of exactly the same type, namely indurated with ragged undermined edges and bases covered by a dirty, grayish necrotic membrane.

Diagnosis. Syphiloma vulvæ (syphilitic, indurative, ulcerative, cedematous tumors of both labia minora and deep syphilitic ulcers of lower third of

vagina with destruction of practically the entire perineum).

Operation, May 28, 1919. The pedicles of both tumors of the labia minora were clamped off, burned off with cautery, and stumps securely ligated with double chromic catgut. The ulcerated area of the lower part of the vagina was then also extensively cauterized and the vagina tightly packed with iodoform gauze.

This patient also received bi-weekly intravenous injections of salvarsan, 0.6 gram, during her convalescence with marked improvement in the local conditions.

The laboratory report was practically identical with that of the first case.

Laboratory report. Specimen consists of (1) portion of right labia and (2) scrapings from ulcers in the vagina.

No. 1. Specimen consists of an area from the right labium majus measuring $5\frac{1}{2}$ by 4 centimeters in the distal portion of which there is an indurated ulcer 3 by 1 centimeters, with ragged undermined edges and base covered by a grayish necrotic membrane. Histological examination reveals a

complete destruction of squamous epithelium associated with marked round-cell and plasma-cell infiltration. Their location and indolent course appear to warrant the diagnosis of syphilitic lesions of the labia and vagina.

Material from the labia and vagina stained by the Levaditi method failed to reveal spirochæta in the tissues.

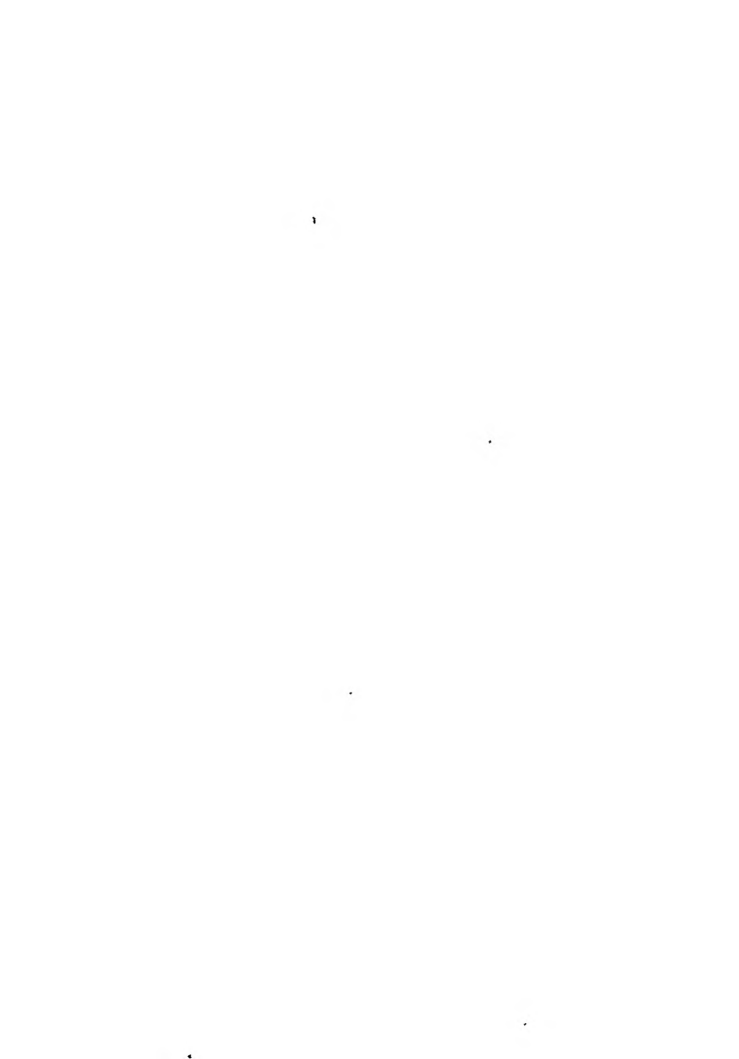
CONCLUSIONS

1. In conformity with modern knowledge and in the interest of a better understanding of the disease, all misleading names such as esthiomène or lupus vulvæ should be exterminated from the literature.

2. Syphiloma vulvæ correctly designates the disease as a manifestation of tertiary lues.

3. A positive Wassermann test is not essential in view of the long standing character of the specific infection in the majority of the cases.

4. The treatment under all circumstances should consist of (1) operative removal of all tumors, hypertrophied tissues and ulcers, followed in the same session by (2) energetic cauterization and combined with (3) intensive antisyphilitic medication.



THE EFFECTS OF RADIUM EMANATIONS UPON BRAIN TUMORS¹

BY CHARLES H. FRAZIER, M.D., D.Sc., F.A.C.S., PHILADELPHIA

MALIGNANT tumors of the brain differ from malignant tumors of other organs and structures in ways that are quite striking. Notable, as a differentiating feature, is the absence of metastasis. No matter how long its duration, a malignant lesion of the brain never metastasizes to other organs. This curious feature of the life history of brain tumors is not easy to explain.

Secondly, unlike that of malignant tumors elsewhere, the growth of malignant tumors of the brain is in many instances surprisingly slow. The rate of growth varies, no doubt, according to the character of the growth; thus the life history of the endothelioma is longer than that of the glioma, but even in the latter there is reason to believe from the history that 4 or 5 years may have elapsed before the patient is sufficiently disturbed to consult the surgeon and with the endothelioma, the history may cover a period of 10 years or longer. Only recently I uncovered a tumor in a patient who had had focal symptoms (Jacksonian seizures) 10 years before she began to suffer from headache and visual disturbances.

A third distinguishing feature of brain tumors is this: that the cardinal symptoms, headache, vomiting, and disturbances of vision, are attributable often not to the presence of the tumor but to the secondary ventricular distention. The tumor often is not the immediate cause of death, nor for the distress that usually precedes it; whereas in malignant growths of other organs, death is due to the more or less widespread metastasis and the resultant cachexia and anemia.

A fourth distinction and a very practical one, is the inaccessibility of the growth on the one hand or the absence of localizing signs on the other. An exploratory operation for an obscure tumor of the abdomen will invariably discover the seat and nature of the growth. The exploratory craniotomy will often fail to reveal the growth if it be subcortical and without clearly localizing signs.

Finally there are conditions, peculiar to the brain, which make radical operations prohibitive in any but those tumors that are distinctly encapsulated. The large infiltrating glioma, without definition perceptible to the naked eye, is not a surgical lesion and we must be content with the temporary measure of relief which palliative procedure may offer.

Because the rate of growth is surprisingly slow, because brain tumors are often inaccessible or unlocalizable, because they do not metastasize but continue until the end confined to the original focus, because they are often not directly but only indirectly responsible for the subject's death, because technical difficulties interfere with their radical removal, there is a field for some physical agency, which will not only arrest the growth of the malignant lesion, but even lead to a process of retrogression. It was with this thought in mind that in 1914 I secured by gift for the University Hospital 125 milligrams of radium and deposited it in the care and at the disposal of Dr. Henry K. Pancoast. Since that time, radium has been applied in my clinic under the direction of Dr. Pancoast in the treatment of brain tumors in 24 cases, and from these I have selected 3 cases as illustrations of what radium may accomplish. In these there seems to be indisputable evidence that by radium emanations the growth of the tumor has been arrested and in all probability the tumor destroyed.

For the sake of brevity, the cases are presented in abstract.

CASE 1. In 1914, an inoperable tumor of the cerebellum was found at operation. At the time

was first noted; 4 months later the patient was ambulant. Six years after the first treatment the patient is living, and while symptoms of cerebellar disturbance have not disappeared, the condition is now stationary.

W. R., age 13. File No. 27808, admitted to University Hospital June 18, 1914. The patient had

¹Presented at the meeting of the International Surgical Society, Paris, July 18, 1920.

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TUMORS OF THE BLADDER

INCLUDING REPORT OF VEGETATING SYPHILOMA OF THE BLADDER

BY W. C. DANTORTH, M.D., F.A.C.S., EVANSTON, ILLINOIS

Gynecologist, Evanston Hospital

AND

B. C. CORBUS, M.D., F.A.C.S., CHICAGO

Chief, Illinois Social Hygiene Dispensary

DURING the last 7 months, there have come under our observation 7 cases of bladder tumors. Three of these were carcinomata, 3 papillomata, and 1 condyloma of the bladder. The discovery that condyloma could exist in the bladder and simulate a true tumor growth so closely that cystoscopically they were apparently identical, came as a surprise to us. It is with a view of reporting our findings in this interesting case, as well as our experience in treating the remaining cases of neoplasm, that we present this report.

CASE 1. A young woman of 25 entered the hospital on the service of one of us (D), December 11, 1919, complaining of pain over the lower abdomen, painful and frequent urination, loss of weight; 22 pounds in last 2 months.

Previous history. The patient had measles, chicken pox, and scarlet fever as a child; neisserian infection 3 years ago, criminal abortion in September followed by evacuation of uterus. She states that she had fever for 4 days after this. Menstrual history began at 14, the periods were regular, and always came, and

brothers, one sister; the father and mother are living and well.

Present illness. Since abortion in September last, the patient has not gained strength or regained her appetite and has lost about 15 pounds in weight.

Two months ago she began to be troubled by frequent urination and pain on voiding. The pain was of a sharp and burning character and would subside in the intervals between voiding. She would void every hour or so during the day and would get up from four to five times at night. She has suffered from abdominal pain, which is not localized in any particular spot, but which seems more pronounced over the right iliac region, to lesser degree in left iliac region and slight tenderness over bladder area. The pain is not continuous and not very acute. She tires very easily.

Physical examination shows an anæmic, slender, young woman, distinctly under weight, with no abnormalities. The chest is negative; the abdomen flat, symmetrical, slender; the liver and spleen not palpable, and there is slight tenderness in both lower quadrants; no palpable masses.

Urinary examination on admission showed a specific gravity of 1008, serum albumin present and a very marked pyuria. Examination of urine for tubercle bacillus was repeatedly negative. Smears for gonococci were negative. The Wassermann made 3 days after admission was slightly positive. A second Wassermann done two days later was negative.

Vaginally the anterior wall of the vesicovaginal septum was found to be very distinctly infiltrated, indurated, and immovable, presenting an irregular surface. Cystoscopy showed the entire bladder floor to be occupied by an infiltrating growth with many small peaked projections, of papillomatous character, together with larger, rounded masses, the upper portions of which showed a translucency indicating oedema. Neither ureteral orifice could be

least an arrest of the disease and what remains is the expression of the damage already accomplished before she came under your care."

The outcome in this case has been more striking than in Case 1, in that vision has been conserved at least in one eye and the residual signs of cerebellar disturbance are but trifling as compared with the original state. There is, however, in this case a link of evidence missing in that the tumor was not exposed on the operating table. However, the clinical picture would seem to admit of but one interpretation. Viewing the case in the light of a therapeutic achievement, the results 7 years after the first treatment have been, to say the least, extraordinarily gratifying.

CASE 3 Recurrence of headaches and visual disturbances 19 months after a sella decompression. Following a course of glandular feeding, X-ray and radium therapy there was a disappearance of scotomata, restoration of normal vision and re-establishment of menstruation. There was no recurrence 3 years after treatment was instituted.

(struma)

Clinical examination disclosed the following: amenorrhœa had been present for 3 years, and still persists, aggravation of headaches, ocular disturbances, right eye, vision 6/6, left eye vision 6/9; scotoma in both right and left eyes.

Treatment Radium and X-ray therapy, thyroid and pituitary feeding.

Final observation June 1920. Headaches are not so severe, menstruation has been established after cessation of 6 years. Scotomata in both eyes have entirely disappeared. Vision is normal.

The return of normal vision and the abatement of one of the evidences of pituitary disturbance—amenorrhœa—were the two striking results of treatment in this case. Either of them would have been sufficient to convince one that the structure of the pituitary had been decisively influenced, otherwise (after the relapse, which followed a year after the operation), vision would not have been restored nor menstruation re-established. There is to be considered in this case, however, the fact that both radium and X-rays were used and to each must be accredited a share in the results. So far as I know this is the first case

in which the radium was applied to the pituitary body, as Dr. Pfahler directed, through the posterior nares.

It seems to me we have learned from this case a very practical lesson in the treatment of pituitary disorders. Sellar decompressions, we know, are often followed by most gratifying and very prompt restoration of vision. Often within a few hours of the operation the patient realizes his sight is better. But pituitary lesions cannot be dealt with radically and we have had in the past no safeguard against recurrence. Secondary attempts to reach the sella, via the transsphenoidal route, are either difficult or impossible. Hence it is a matter of really great significance that we have some means of treating recurrences, once developed, and in the same agency, one would suppose, a means of preventing recurrences. So I count this case worthy of record as marking a distinct advance in the therapeutics of pituitary disorders.

GENERAL REMARKS

I present these 3 cases to the medical profession in the hope that others may be encouraged to continue this clinical investigation. The subject is still in the developmental stage, there is much still to be learned in technique. At the present time, both Dr. Pancoast and I advocate direct implantation

the research of Williamson, Brown and Butler (SURGERY, GYNECOLOGY AND OBSTETRICS, this issue, page 239) the first really helpful bit of information that may be applied to the technique. We have not known what the effect of radium emanations is on normal brain tissue. These investigations now tell us just what may be expected when 50 milligrams of radium is applied 6, 12, or 18 hours, upon a normal cortex. This research, in which I have a personal interest, must be continued to include larger dosage and longer hours of application. The field must be extended to include the spinal cord. We want to know more about the penetrating effect of the γ -rays through both tumor and normal brain cells.

II. Granuloma

4. Tumors of infective origin
 Secondary lues—condyloma
 Tertiary lues—gumma

Syphilis of the bladder manifests itself in the following ways:

1. *Secondary period.* During the time of the generalized eruption, it is not uncommon to find the bladder studded with discrete papules, similar to those appearing on the skin. These findings have been reported by numerous observers. There is also a form of *vegetating syphiloderma* which throughout the literature has been described as "gumma of the bladder," except by Denslow. He reports a case in which he describes a typical picture of condyloma of the bladder. In the case here reported the diagnosis of condyloma was made independently of Denslow's report which we did not see until later.

If one considers that during the period of secondary invasion all the tissues of the body are invaded by the *spirochæta pallida*, one may easily assume that that which occurs on the skin may easily happen on other surfaces of epithelial character. It may easily be conceived that the changes which occur in a papule on the skin on a moist surface may occur on the moist mucous surface of the bladder. This may occur at any time after the primary invasion. According to Thompson, this moist, papular syphiloderma may occur 30 years after a primary lesion, when no treatment has been used.

The bladder offers a warm, moist bed for the growth and development of the *spirochæta*, and the thin mucous membrane of the bladder may be regarded as resembling fairly closely, so far as the conditions which it offers for the growth of the organism are concerned, the condition about the anus. The moist papular syphiloderma instead of becoming flat occasionally becomes warty and papillomatous. Several lesions may coalesce and a large cauliflower mass may develop which we may term a *vegetating syphiloma of the bladder*.

As studied with the cystoscope these tumors simulate a papilloma so closely that it is impossible at times to differentiate between them. In many of the cases reported,

these growths are referred to as gumma, as few observers believed them identical with condyloma which occurs upon the skin. It was with a view of stimulating further study of this lesion that the accompanying pictures were made.

In passing a cystoscope over this hypertrophied papillomatous mass, one is impressed with the similarity to bullous œdema. However, by carrying the cystoscope to the border of the mass, the growth in uniform palisades can be differentiated from the normal bladder. The mass is freely movable. So far as the surface portion of the growth is concerned, the papillæ rise and fall under the slightest pressure from the distal end of the cystoscope. The points of the papillæ are arranged in peaks and are of a silver gray color due to their distention, which causes them to be translucent under the cystoscopic light. Looking across this mass through a McCarthy cysto-urethroscope, the papillæ look a little more yellow from the retained serum under the mucous membrane. Seen later and after continuous treatment, the round and oval papillæ show as delicate, pearly, translucent fingers, resembling stalactites. The cysto-urethrosopic picture may be compared to looking over the uneven surface of a lake, the peaks of the waves representing the papillæ, perfectly transparent at their apices and so soft and delicate that they may easily be pushed over with the instrument. In the case here reported, induration at the base was marked and could easily be felt through the vaginal walls.

The histopathology of the vegetating syphiloderma has been described by Dennie as follows:

When sectioned, the lesion is seen to consist of two parts, an upper, dense, finely striated portion, about 4 millimeters thick and a lower narrowed core. Microscopically the former shows many slender epithelial fingers connected above by thin bridges and below penetrating the corium.

Tertiary period. Gumma of the bladder simulates the ulcerative form of papillary carcinoma. This is especially manifest when they are both broken down and covered with mucus. As these tumors may occur during

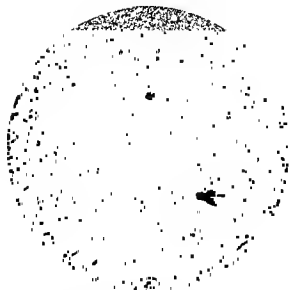


Fig 1 Dog No 3 Six hour exposure to 50 milligrams of radium. This area shows degeneration and hyperemia, but no hemorrhage (low power)



Fig 2 Dog No 4 Drawing showing a central necrotic area with thickened blood-vessels. Surrounding this is a circle of hemorrhage, and beyond this is an area of congestion (low power).

closed. In the interval between the introduction of the tube and its removal, the animals showed no symptoms whatsoever. They appeared absolutely comfortable and did not vomit as do patients sometimes after a pelvic application and even after applications to the head. After removing the radium the bone fragment was not replaced; the dura and musculocutaneous structures were closed with silk sutures.

PROTOCOLS

I Dog No 2 4 hour exposure to 25 milligrams of radium. The dog displayed no signs of discomfort while the radium was *in situ* and made an uneventful recovery, up to the present time, 16 weeks after the radium application there are no signs or symptoms of any sort.

II Dog No 3 a 6 hour exposure to 50 milligrams of radium. The dog made an uneventful recovery, and showed no symptoms for a period of 3 weeks, at the end of which he was chloroformed.

Autopsy The incision in the dura had not healed the edges of the dural incision were necrotic. The tissues of the scalp appeared normal. On the motor cortex was a linear mark 0.4 centimeters wide, and 2.5 centimeters in length. It marked the point of contact of the tube, and grossly resembled an area of hyperemia. No other lesions were found.

Microscopically that part of the cortex in apposition to the tube showed necrosis of the area to a depth of 2 millimeters. The nuclei showed signs of degeneration, but they had not broken down. The

entire area takes the basic stain, there is some hyperemia, but the blood vessel walls are not de-

re to 50 milligrams of radium. He made an uneventful recovery, and showed no symptoms during the following 3 weeks, at the end of which time he was chloroformed.

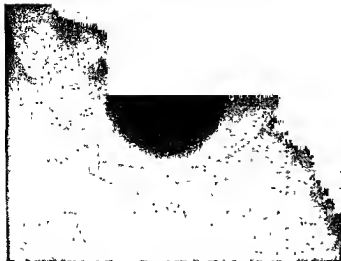
Autopsy Edges of the dural incision were curled under and discolored. The motor cortex showed an area of hyperemia 0.9 centimeters wide, and 3 centimeters in length, down the middle of which was a strip 0.4 centimeters wide, black, and necrotic, which marked the area of direct contact of the tube. There were no other findings.

Microscopically the area of degeneration appeared 0.5 centimeters deep. There remained a few cells with marked degeneration but the great majority were entirely destroyed, and the products of their destruction were scattered throughout the necrotic area. In this zone the blood-vessel walls were thickened three to four times their normal

attempted repair.

IV. Dog No 5 18 hour exposure to 50 milligrams of radium. He made an uneventful recovery, and during the succeeding 3 weeks showed no symptoms. At end of 3 weeks was chloroformed.

Autopsy The dura was discolored black over the area of exposure and its edges were curled. The cortex showed a black area of necrosis 0.9 centimeters long, surrounded by a thin zone of apparent hyperemia. There were no other findings.



Roentgenogram of the bladder taken in the anteroposterior position showing vegetating syphiloma

smaller secondary tumor was also removed by the cautery. The bladder was then closed in the usual way with drainage, leaving 50 milligrams of radium on a sound in contact with the site of the tumor. She remained in the hospital 33 days. While there, radium was used five times. The patient returned 2 weeks later for another radium treatment. After that, illness prevented her returning to the hospital, until December 26. Then radium was used once a week for 6 weeks. This makes altogether 12 radium treatments. She received 6 treatments of 600 milligram hours each and 6 of 300 milligram hours each, the radium being screened by 0.5 millimeter of silver and 1.0 millimeter of brass nickel-plated,

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first seen she had had intermittent attacks of hæmaturia. The attacks were of short duration but occasionally lasted several days. The last attack was more marked than the others. She was referred by her family physician, Dr. C. T. Roome, to one of us (D) for examination.

Cystoscopy showed the entire bladder slightly reddened, with very slight trabeculation. On the right side of the bladder and outside of the ureteral opening was a papillomatous tumor about one and one-half centimeters in diameter showing a bleeding point in the lower, inner aspect. Both ureteral orifices were normal.

The following day this tumor was fulgurated by one of us (C), fulguration being repeated six times, after which the entire level of the mucous treatment was begun under visual control by means of a cystoscope designed for the introduction of radium, the applicator being left in contact with the side of the tumor for 12 hours. Similar radium treatments



Roentgenogram of the bladder taken in the posteroanterior position, showing vegetating syphiloma

were given four times. She then left for Texas, and a report contains

a record of cystoscopic examination showing no recurrence of the growth.

CASE 4. Man, age 41, referred to one of us (C) by Dr. I. A. Port, for hæmaturia. The family history is negative. The patient has always been well except for urethritis at 21 years of age.

Present illness. About 10 years ago, the patient began to have an uneasy feeling in the bladder, which he noticed off and on. About 5 years ago he had attacks of terminal hæmaturia, very little blood appearing at first.

Three years ago he had an attack of severe bleeding. At this time he was cystoscoped and a

obstructed urination and he catheterized himself, causing a severe cystitis. Cystoscopy was performed under scopolamine and morphine and revealed a papillomatous tumor of the ureteral opening.

Under anesthesia, a suprapubic incision was made and the tumor was burned by diathermy. The usual closure was made. The application of diathermy in this operation was done by Dr. Gustave Kohlscher.

The first radium treatment was given 10 days later through the suprapubic wound, the radium being applied for 12 hours. Seven days later radium was again applied. The patient received six radium treatments of 600 milligram hours each and four of 300 milligram hours each, the radium being screened as described above. At the conclusion of this series of irradiations, cystoscopy showed the tumor to be

alone will kill cancer cells to a distance of 1 centimeter. Twice this distance or 2 centimeters requires four times that dose. Sarcomata usually do not require so much dosage. The exact amount required in the case of brain tumors will depend largely on experience, always bearing in mind the law of inverse squares when considering dosage and the size of the tumor. If a dosage is employed presumably just sufficient to destroy a brain tumor of any given size and one which responds to radium readily, we may assume from the above experiments that the exposure of the normal brain tissue just beyond the growth is not likely to be of any serious consequence.

CONCLUSIONS

In conclusion we find that

1. The γ -rays after passing through 0.4 millimeter of platinum penetrate brain tissue and have a destructive action within a radius of 5 millimeters, with a dosage of 900 milligram hours.

2. The effect upon the blood-vessels varies according to the distance from the radium and the number of hours applied.

3. The above experiments give assurance that, in the case of those brain tumors which respond readily to radium, little or no damage will be inflicted upon the brain tissue surrounding the tumor, if the radium is implanted in the growth. The dosage employed on the growth can be regulated so as to be destructive only to the periphery.

It is our purpose to examine the brain of dog No. 6 after a period of 4 months in order to determine what reparative processes will take place in that time. It seems advisable also to study the effect of greater milligram hour dosage upon brain tissue. We have begun along similar lines a series of experiments to determine the effect of varying doses of radium upon the spinal cord.

We are indebted to Dr. Frazier, Dr. Pancoast, and Dr. Sweet for the valuable suggestions and the assistance which they have given us.

RECKLINGHAUSEN'S DISEASE WITH SURGICAL COMPLICATIONS

REPORT OF TWO CASES

By C. E. CALDWELL, M.D., CINCINNATI, OHIO

UNDER the title of von Recklinghausen's disease is included a variety of conditions, fibroma molluscum, neurofibroma, plexiform neuroma. That all these conditions are dependent upon a constitutional vice, probably some abnormality in the endocrine glands, is not unreasonable to assume. A rather extensive survey of the literature leads one to the conclusion that the skin picture formerly known as fibroma molluscum and, since von Recklinghausen's thesis in 1882, as neurofibroma of the skin, is associated with, and often seriously complicated by, other conditions. For this reason von Recklinghausen's disease is no longer to be regarded as a local disease of the skin; but simply as one manifestation of a general or constitutional vice.

These patients are not infrequently of a low grade mentality; there is usually about them something which for want of a better term we might call freakish. The facial features are often exaggerated in size, or lacking in symmetrical proportion. Co-existent with the tumors of the skin, which are quite characteristic, a pigmentation is present sometimes sufficiently marked to suggest Addison's disease. Psychoses of a more or less marked character are present in a considerable number of cases. Tumors of the peripheral nerves, and less frequently of the central nervous system, are found. Skeletal changes and muscular dystrophies occur not infrequently. Tuberculosis is a not infrequent complication. A distinct tendency for cases to belong to the family type has been noticed (1).

1. Suprapubic cystotomy and cautery excision followed by radium in one case;
2. Fulguration followed by radium in two cases;
3. Suprapubic cystotomy with destruction of tumor by diathermy followed by radium in one case;
4. Fulguration alone in one case

We would divide the treatment of bladder tumors in the following way:

1. Fulguration through the cystoscope followed by radiotherapy applied through the urethra.

2. Cystotomy and the destruction of the growth by diathermy followed by radium.

Trans-urethral fulguration is particularly applicable to small growths especially if these be non-malignant papillomata. It may be repeated from one to ten times and does not require a prolonged detention in the hospital. Particularly in women, the method is so easy of application that scarcely any discomfort is caused. Care should always be taken that the underlying mucous membrane is not damaged by the fulgurating wire. Fulguration also is of value in treating small recurrences following operation. It was so used in two of the cases reported above.

The larger tumors are better attacked through the suprapubic incision. Extra-peritoneal cystotomy is highly safe and is easy of execution and may often be done under gas anaesthesia. The growth may then be destroyed by diathermy, which is simply the application of fulguration on a large scale using a large metal fulgurating point. By this means, the tumor may be destroyed down to the level of the mucosa and more deeply-lying cells and those in the immediate vicinity of the bladder wall may be coagulated, thus rendering less likely secondary implantation or recurrence of the growth.

The credit for first calling attention to the value of this mode of treatment belongs to Kolischer.

We particularly wish to emphasize the value of radium in the treatment of these growths of the bladder. By whatever means we may choose primarily to remove the tumor, it seems to us that it is essential that the operation should be followed by radiation

in order to render less likely the recurrence of the growth. This we look upon as a prophylactic measure of high importance.

Radium may be applied through the suprapubic wound upon the end of a flexible sound, which is introduced at the end of operation, the radium being visually placed upon the site from which the tumor has been removed. Later applications, however, must be made either by introducing the radium upon the sound through the suprapubic wound, placing it as nearly as possible in the area of the tumor, or, by introducing it through the urethra upon the sound, attempting also to place it as nearly as possible in contact with the tumor or in contact with the place from which the tumor has been removed.

To overcome the uncertainty in bringing the radium applicator directly in contact with the area it is desired to treat, a cystoscopic applicator modeled after that which has been used by Young has been devised by one of us (C). This applicator makes it possible for the radium to be visually placed in contact with the bladder area which it is desired to treat.

The instrument consists of a sheath to the beak of which a radium applicator may be screwed and through which passes a straight cystoscopic lens system by means of which the movements of the applicator may be observed. Upon the sheath is a sliding ring with a set screw which may be fastened in contact with the external meatus in order that the instrument may not pass further in or slip out after the radium has been applied, as the position of the ring may be observed by the nurse. A metal wing or indicator is also provided at the outer end of the sheath which lies in the same plane as the beak so that by watching the position of this and the ring above alluded to, the radium within the bladder may be kept in the same position for several hours, if desired. After introducing the instrument, we apply a straight drainage tube of metal, which fits the lumen of the instrument accurately. To the end of the metal tube a rubber drainage tube may be attached so that the patient may be kept dry.

This instrument we have used with great satisfaction. The accompanying illustration



Fig 2 Case 2 Fibroma of ulnar nerve, one-third natural size

The patient claims she had "scrofula," measles, mumps, and small pox as a child, tonsillitis occasionally. She gives no traumatic history although there is a question as to the left ankle having been broken.

The father and mother both are dead, the father having succumbed to Bright's disease and the mother to an unknown cause. One brother is living and well, one brother died two years ago from Bright's disease, two sisters are living and well, one sister died from cardiorenal disease. The family history reveals no history of tuberculosis, cancer, or mental disease.

The patient is single, gives no history of miscarriage, and denies venereal disease. She takes whiskey as "toddy" occasionally, drinks no beer, but does take coffee and tea—about 3 cups a day. She has done housework all her life.

Physical examination of surgical condition. Scattered over the trunk and limbs of the patient are numerous, irregular soft, fat-like masses, varying in size from that of a small pea to that of a walnut. These masses are more pronounced over the nipple region of each breast and along the anterior part of the chest and abdomen. In the left epigastric

rounded, smooth mass about 12 centimeters long and apparently 5 centimeters in thickness. The mass is freely movable beneath the skin, and does not change position upon contraction or relaxation of the muscles of the arm. Upon palpation, the patient states she has a tingling sensation down the ulnar side of the forearm and into the ring and small fingers of the left hand. There is a marked atrophy of both thenar and hypothenar eminences with a marked thinning of the interosseous spaces. There is a persistent flexion of the small and ring fingers (claw-hand). The left arm and forearm are atrophied to a considerable extent.

Operation, June 22, 1919. Local anesthesia (apothesine) was used. An incision about 10 centimeters in length was made along the inner border of the biceps muscle. The skin and fascia were severed. The tumor mass was found to be lying in



Fig 3 Case 2 Gluteal tumor

the path of the great vessel of the arm, pressing on the median nerve and brachial vessels. The basilic vein passed over the mass. We opened the fascial covering of the mass which was found to be a nodular enlargement of the ulnar nerve about 10 centimeters long. The nerve was exposed above and below the tumor mass, and the mass removed. The bleeding points were ligated and the fascia and skin closed with catgut sutures. The patient left the operating room in fair condition. She complains of severe pain in the left arm about the incision. She sleeps well, has vomited considerably since operation, but is not uncomfortable.

June 24, 1919. The patient apparently is very weak. She complains of lack of appetite. Each-

such pain
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June 29, 1919. The patient's condition is very good. She is up and about, and has little pain in the arm. She eats fairly well.

Pathological report by P. G. Woolley. The tumor mass was preserved in formalin. It was ovoid, firm,

a large nerve incompletely lobulated. An attempt to dissect the mass, commencing with the nerve trunk, was made and was unsuccessful, for it seemed that the sheath of the nerve was continuous with the capsule of the tumor, and that the nerve trunk itself disappeared. The appearance suggested, therefore, that the tumor itself had arisen within the trunk of the nerve and that the nervous tissue

SYPHILOMA VULVÆ¹

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THE reason that the descriptive term, syphiloma vulvæ, is applied to the disease under consideration, rests on both histological and clinical grounds. Histologically, the hypertrophied masses of the diseased area are gummatous and subject to the familiar necrotic changes and cicatricial contractions seen in gummata. Clinically, the vulvar changes become manifest a long period, some times many years, after the primary infection. Moreover, luetic induration of the vulva is apt to supervene in the absence of all other specific changes after a long interval of apparent health, which accounts in part for the many mistakes in diagnosis which are made.

The old term "esthiomène" (from the Greek word, meaning "to erode"), first applied to the disease by Huguier in 1849, being purely descriptive and, therefore, too general, is advantageously replaced by a name distinctly indicative of the syphilitic origin of this condition, as shown in the title. The customary misleading nomenclature such as esthiomène, lupus vulvæ, etc., still found in the literature should be abandoned and replaced by syphiloma vulvæ, which term characterizes the disease.

Although in a previous contribution to this subject entitled "Esthiomène and Secondary Elephantiasis Vulvæ," Dr. Heimann and I (18) took the stand that the disease was the expression of a process set afoot by no known specific agent as a direct exciting cause, continued investigations along this line incline me more strongly to the opinion that these changes are always ultimately referable to a specific, i. e. luetic infection. This view is gradually gaining ground in the literature, although some writers still interpret the affection as a primary idiopathic disease; others, more numerous, as a manifestation of tuberculosis and sometimes carcinoma; a few are inclined to attribute it to lymphatic obstruction resulting in a form of pseudo-elephantiasis; and finally, it has been explained

as a filth disease, beginning as a purely inflammatory change due to local traumatism or irritation and maintained by neglect and lack of cleanliness. However, incontrovertible testimony is constantly accumulating to the effect that this peculiar and long unrecognized condition represents a tertiary syphiloma of the vulva.

It is noteworthy in this connection that in the *Index Catalogue of the Surgeon General's Office U. S. Army*, 1915, vol. xx, Second Series,

of the vulva, an entirely incorrect inference. Still more recently, in the second edition of Graves' *Gynecology* 1918, p. 229, it is stated that the disease is of obscure origin and does not yield at all to antisyphilitic treatment, although it is thought to have some possible relationship to syphilis. The writer challenges this statement on the ground that syphilis is always responsible for the disease and that specific treatment in combination with operative removal of the hypertrophied tissue is followed by decidedly favorable results, even in those cases where the syphilitic character of the lesion is not demonstrable by the customary tests. Unquestionably an etiological part is occasionally played by malignant disease and by tuberculosis in the production of similar vulvar changes, as in a case observed by Sir Malcolm Morris concerning a woman past middle age who, after having been for years subject to lupus of the face, developed the disease in the vulva.

If, on bacteriological examination of specimens, the tubercle bacillus is found, the case is one of lupus pure and simple and is not related in any way to the disease under consideration. Primary malignant disease of the vulva in the form of epithelioma is of very rare occurrence and of more rapid growth than syphiloma, as I have shown in a previous paper² on "Primary Carcinoma of the Vulva."

¹Stein, A. Am. J. Obst., 1916, vol. lxxiv

THE INTERPRETATION OF MUSCLE FUNCTION IN ITS RELATION TO INJURIES OF THE PERIPHERAL NERVES¹

By C. C. COLEMAN, M.D., F.A.C.S., RICHMOND, VIRGINIA

THE material for this discussion was collected in the neurosurgical service of General Hospitals, No. 11, Cape May, N. J., and No. 41, Staten Island, N. Y. A few observations made on private patients have been included to emphasize certain phases of the subject not supplied by the writer's data gathered in these reconstruction hospitals. All of the army patients had received wounds at least several months prior to coming under observation, and the majority of them were studied for several months under conditions highly favorable to the investigation of the motor disability of peripheral nerve injuries. The cycle of disturbed function, ranging from great enfeeblement or total paralysis to complete return of muscle action, could often be noted during this period of observation.

The degree of disability following an injury of a peripheral nerve is estimated primarily in terms of voluntary movement, the sensory and trophic loss usually being of much less consequence than the motor impairment.

Recovery of voluntary movement is the most valuable evidence of regeneration of the paralyzed nerve from the standpoint of diagnosis and treatment. As a corollary incomplete examinations of muscle function have assigned to useless methods of nerve

repair a value which is entirely unwarranted and can be disproved by careful study of the involved muscle groups. Accurate interpretation of voluntary movement requires careful and repeated examination of the affected muscles. A knowledge of the normal muscle action is often bewildered by the modification of an engrafted and persistent functional element. Associated lesions of the bones, joints, blood-vessels, muscle bellies, and tendons frequently becloud the clinical picture. Much study is required in cases of combined injuries to dissociate the lesions accurately and assign to each its share of the responsibility for limitation or loss of voluntary movement. Analysis, on an anatomic basis of muscle function as it is modified or abolished primarily by the nerve lesion, is the purpose of the present paper.

In the interpretation of muscle function in the distribution of an injured peripheral nerve, the chief difficulty arises from the unexpected appearance of voluntary motion in segments of the limb supplied by the nerve in



Fig. 1. Paralysis of the left deltoid. Elevation of the arm by the supraspinatus assisted by the fixation muscles of the shoulder.



Fig. 2. Atrophy of the brachialis anticus.

¹Read before the Southern Surgical Association, at New Orleans, December 26, 1919.

James Nevins Hyde (12), writing in 1889, was like Fournier, a pioneer whose insight into the causes underlying this disease was too far ahead of the standard of his contemporaries to find ready acceptance. At that time he called attention to the clinical fact that a woman with a gummatous lesion of the vulva may not only betray no other symptoms of syphilis but may exhibit all the other evidences of sound health. In his experience women were far more frequently than men the bearers of isolated syphilitic lesions.

It may be noted here that it requires special training to recognize syphilis in a single symptom. Furthermore, this lesion does not conform to the common preconceptions relative to other genital manifestations of syphilis. Not only is the syphiloma of far rarer occurrence but it also does not in external features and career resemble chancres and so-called secondary lesions of syphilis having a vulvar site.

In 1890, R. W. Taylor (20), in a very complete and elaborately illustrated contribution to the subject, described some illustrative examples of luetic deformities of these parts, namely the various forms of hypertrophy induced by the indurating œdema of syphilis; hyperplasia resulting from chronic ulcers; the so-called chancroids in intermediary and old syphilis; hyperplasia in old syphilitics presenting no specific character and occurring soon or long after the period of gummatous infiltration, in some cases being co-existent with specific lesions which are present elsewhere in the body.

Scattered through the older literature illustrative cases may be found showing an endeavor to make syphilis the responsible factor in these cases. For example, Boulton (2), in 1883, operated upon a case reported by him as one of extensive syphilitic disease of the vulva with a gummatous hyperplasia of the clitoris. He removed the hypertrophic clitoris with the cautery and administered potassium iodide internally with very favorable results. The findings on examination are graphically described as a bifurcated mass the size of a double fist consisting of hypertrophic clitoris and nymphæ

hanging down in front. Goucher and Nathan (8), in 1908, reported a case of chancriform syphilide of the vulva in a woman of 45 years whose left labium majus was enormously enlarged and covered with papular syphilides. The swelling subsided as a result of iodide injections.

Six illustrative observations on patients between 22 and 58 years of age suffering from tertiary syphilis of the vulva were reported by Lena Kurz (13), in 1913, who correctly designates the disease as a tertiary manifestation of syphilis but unfortunately still clings to the objectionable term of *esthiomène* or *lupus vulvæ*.

R. Vignolo (23), in 1914, reported a case of tertiary anorectal and vulvar syphiloma in a patient of 30 years who before coming under his observation had been treated elsewhere for some time for vaginal affection which was diagnosed as "*esthiomène*" and treated with repeated cauterizations. Her general condition became steadily worse and she was finally admitted to a surgical clinic where the diagnosis of carcinoma of the rectum was made and operation recommended. When seen by Vignolo-Lutati in the Turin clinic he made the diagnosis of syphilis although the Wassermann test was negative, and specific treatment was instituted in the form of one to two weekly injections of calomel, gr. 5. Within 2 months remarkable improvement was obtained both as regards the general condition and the local findings. The therapeutic effect thus confirmed the assumption of a tertiary recto-anovulvar syphiloma in this highly instructive case. The observer pointed out that the etiologic diagnosis confirmed by the treatment was especially important on account of the coincidence of tertiary anorectal and vulvar lesions.

Four cases of syphilitic induration of the vulva in young colored women were very recently reported by Gallagher (7), who on the basis of his observations concludes that a radical removal of the growth with complete and thorough cauterization of the ulcerated areas and intensive antisiphilitic medication will effect a cure in these cases. My own experience has led me to the same conclusion.



Fig 5 Flexion of wrist against force of gravity by the extensor carpi metacarpi pollicis in complete paralysis of all muscles supplied by the median and ulnar nerves.

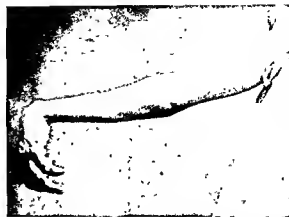


Fig 7 Musculospiral paralysis of fourteen years' duration. Patient has never worn a splint. Extreme hypotonia of extensor muscles of forearm. Forcible flexion of fingers produces no elevation of wrist.



Fig 6 Extension of the wrist by forcible flexion of the fingers in musculospiral paralysis.



Fig 8 Extension of wrist by long radial extensor with deviation to the radial side. Paralysis of all other extensors of the wrist and fingers.



Fig 6a Wrist drop of musculospiral paralysis with slight hypotonia.



Fig 9 Abduction of thumb in ulnar paralysis.

The larger number of substitutionary movements in patients with peripheral nerve injuries is found in the muscles of the upper extremity and particularly in the intrinsic muscles of the hand. Here the convergence

of all the larger nerves of the arm with the action of each, sometimes reinforcing and again overlapping that of the others, may produce deceptive motor phenomena when one or more of the large nerves of the arm is injured.

The subject may be better presented if the components of function of the various seg-



Figs 1, 2, and 3 Case 1 Syphiloma of the vulva

distance from the vessel. The lymphatics are dilated and packed with endothelial cells. The subdermic tissue likewise contains a large quantity of dilated vessels. These lesions terminate in the formation of scar tissue and sclerosis.

Gross and clinical pathology. It is a noteworthy fact that the affected parts present an entirely different appearance and in the dead condition the vulvar protuberances lose their turgescence, the perineal elevations and projections become flattened and lose their semi-erectile character. The induration and hypertrophy of the vulvar and perivulvar tissue disappear almost entirely. The protuberances become softened, flabby, and wrinkled. In the living subject the color of the affected region is apt to be reddish or purplish in youthful subjects; dull gray or livid in older women. The tegumentary covering of an infected labium majus usually presents a purplish color, the mucous membrane is often dusky red, and the abnormal coloration frequently extends to the adjacent labium minus.

A fully developed syphiloma of the vulva appears as a more or less symmetrical enlargement of the labia majora on both sides, so that the shape of the tumor thus formed was compared by Hyde to that of a horse collar. The clitoris above is enlarged and sometimes represented by one or more soft or solid projections. The labia majora are much enlarged as a whole, fibrous and thickened, furrowed, ridged or the seat of fungosities. In some cases they have been found to contain very hard tumors the size of a marble. The labia minora are changed

and deformed, not infrequently the seat of ulceration at their internal aspect and free borders. The vestibule region is greatly thickened, superficially or deeply ulcerated, either diffusely infiltrated or interspersed with circumscribed nodules. These vulvar ulcers have very irregular edges and discharge a scanty and at times purulent secretion.

The luetic process may extend to the perineum and anus manifesting itself in the form of large or small fleshy masses and excrescences. In the second case under my own observations the labial ulceration encircled the introitus vaginæ and extended for some distance into the vagina. Hyde refers to a case in which the vagina and rectum were converted into a wide chasm bridged by a few persistent strands of vulvar or vaginal connective tissue.

Syphilomata, here as elsewhere in the body, may heal, leaving deep, radiating, and adherent cicatrices but are more apt to give rise to destructive ulceration especially in the vulvovagino-anal region. This behavior can be explained by the existing circulatory disturbances due to a primary change of the efferent lymphatics and regional blood-vessels through the syphilitic infection.

Clinically the disease is essentially characterized by its painlessness, non-interference with the patient's general health and disproportion between the local changes, and the resulting disturbances. The affected parts are not abnormally hot. There is no itching, as a rule no tenderness or pressure and no evidence of acute congestion. Until the condition has become complicated by ulceration of the vestibule with more or less in-



Fig 16 Musculoskeletal paralysis. The two distal phalanges can be raised from the table by the action of the interossei and lumbricals

trapezius and other fixation muscles of the shoulder. This case is of interest because of the common belief that substitution for the deltoid by the supraspinatus is ineffective and feeble.

MOVEMENT OF THE UPPER EXTREMITIES

Flexion of the forearm. The mechanism for flexion of the segments of the forearm is

of the musculocutaneous, median, and musculoskeletal nerves. Flexion of the wrist may be effected by any one of the same nerves, while the movements of extension of these joints depend almost solely upon the musculoskeletal spiral.

Paralysis of the musculocutaneous nerve abolishes the action of the biceps and usually the brachialis anticus, the muscles of the first order in the flexion of the forearm (Fig. 2). Satisfactory flexion, however, can be produced by the solitary action of the brachioradialis supplied by the musculoskeletal spiral, and flexion performed by this muscle is accurate and efficient (Fig. 2a). The musculoskeletal spiral supply of the brachialis anticus is a factor in flexion of the elbow, in some



Fig 17 Appearance of hand in high median and ulnar paralysis. Flattening of the hand due to atrophy and unopposed pull of the extensors



Fig 18 Spreading and complete extension of the fingers by long extensor simulating action of the interossei

cases. The pronator radii teres is also a flexor of the forearm, and one patient with paralysis of the musculocutaneous and musculoskeletal spiral was able by practice to accomplish considerable flexion by developing the substitutionary pronator action (Fig. 4).

Extension of the forearm. Extension of the forearm is accomplished entirely by the musculoskeletal spiral nerve. Complete loss of extension of the forearm is infrequent in musculoskeletal spiral paralysis, because the long head of the triceps receives its motor supply immediately after the nerve leaves the tendon of the teres major. Higher lesions of the musculoskeletal spiral are very likely to involve either the brachial plexus or the other large nerve trunks of the axilla. One such case with loss of forearm extension due to musculoskeletal spiral paralysis was operated upon. The lesion consisted of an anatomical interruption of the nerve just below the circumflex (Fig. 3).

Pronation. Complete pronation of the forearm is effected by the pronator radii teres and



Fig 19 A favorable position for the detection of feeble voluntary movements of the leg and foot. The board should be well polished to permit freedom of movement, while the force of gravity is abolished

The lower portion comprising about two-thirds of the entire labium is markedly indurated and ulcerated. The left labium majus is similarly affected with marked ulceration also present, although in a somewhat lesser degree.

This indurative process occupies also the entire perineum extending down as far as the anus and showing several condylomata like growths.

Rectal examination shows the anus and rectum to be free from any indurative process.

Blood examination: polymorphonuclear 72 per cent, lymphocytes 28 per cent, white blood cells 8,700, red blood cells nearly 6,000,000, hæmoglobin 90 per cent.

Wassermann test, May 10, 3+, May 12, 4+

Diagnosis: syphiloma vulvæ (œdematous, indurative, ulcerative, syphilitic tumor of the vulva).

Treatment The pedicle with tumor of right labium minus was removed and the stump was ligated with double chromcatgut. The wound was properly cauterized. There was no bleeding. A large lemon-shaped piece from the right labium

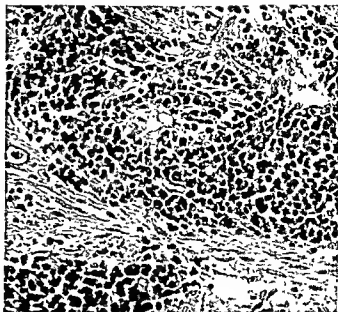


Fig 5 High power photomicrograph of specimen, Case 1.

skin sutured over wound with numerous chronic catgut sutures reinforced with silk-worm sutures.

Exactly the same procedure was followed in regard to the left labium majus only that the area excised was smaller. Before closing the skin the wounds on both sides were thoroughly cauterized.

The excised parts were sent to the laboratory of the Hospital for examination and I am greatly indebted to Dr. Elise L'Esperance, director of the laboratory, for the report on this case as well as the next.

Laboratory report Specimen consists of (1) a portion of the right labium majus, (2) a portion of the left labium majus, (3) a tumor mass from the left labium minus.

No 1, specimen from the right labium majus, shows an area of skin and subcutaneous tissue measuring $6\frac{1}{2}$ by $4\frac{1}{2}$ centimeters. Occupying about $4\frac{1}{2}$ by 3 centimeters of this portion of the labium is a deep, punched-out ulcer with hard, densely indurated irregular edges and a base covered with grayish necrotic material. On cross section the indurated white area is seen to extend from the base of the ulcer for a considerable distance into the subcutaneous tissue of the labia.

Microscopical examination reveals an area of thickened epithelium and an œdematous subcutaneous tissue at the edge of an ulcer. The ulcer shows superficial erosion with exudate of serum, fibrin, and polynuclear leucocytes. The base of granulation tissue extends through to the subcutaneous tissue and approximates a wide zone of round-cell infiltration consisting of many plasma cells and lymphocytes. This infiltration radiates in strands into the deeper tissues and is associated with marked perivascular infiltration (Figs. 4 and 5).

No 2, the specimen from the left labium majus, shows an ulcer $3\frac{1}{2}$ by 2 centimeters with the gross characteristics of the one encountered on the right labium. The ulcer is deeper and the induration more marked. Microscopical section reveals a histology almost identical with the ulcer on the right labium with the exception that the perivascular infiltration is more extensive.

No. 3, specimen of tumor, an oval mass 9 by $6\frac{3}{4}$ centimeters, somewhat firm, covered by thickened, dark integument. On cross section the entire tissue with section reveals that the loose acellular subcutaneous tissue shows pale-

been stained arch fails to reveal spirochætae. The location of the ulcers, the indolent nature and extensive round-cell and plasma-cell infiltration arranged in strands, associated with definite perivascular character, give strong evidence of the syphilitic nature of these lesions.

Diagnosis: Syphilitic ulcers of the labia majora. Marked subcutaneous œdema of the labia minora.

During the weeks of her convalescence the patient received bi-weekly intravenous injections of salvarsan, gram 0.6, and the affected areas showed prompt improvement with rapid healing of the wound.

The patient left the hospital before we were ready to discharge her. She returned 3 months later, however, with a new-growth, similar to that described above and affecting that part of the labia which had not been entirely removed. This second growth was removed by operation and the patient was subjected to drastic antisymphilitic treatment

pollicis when the opponens and flexor brevis pollicis carry the thumb across the palm. When this is done, a shortened extensor of the paralyzed longus pollicis may act as a guy rope on the distal phalanx and produce extension. This movement is similar in mechanism to that causing elevation of the hand in musculospiral paralysis by making a fist.

Adduction of the thumb or approximation of the thumb to the radial side of the second metacarpal segment, is produced primarily by the adductor pollicis (ulnar supply) and flexor brevis pollicis supplied by the median and ulnar. The opponens and extensor ossis metacarpi pollicis of the musculospiral group also assist in adduction of the thumb. Fixation of the thumb by the extensors is essential to every efficient action of the intrinsic thumb muscles. Movement of the thumb to a position perpendicular to the palm, or abduction, is effected chiefly by the abductor pollicis supplied by the median (Figs. 9 and 10). The extensor ossis metacarpi pollicis and opponens also take part in abduction. This movement is a good test of median function and should not be confused with extension of the thumb. Approximation of the pulp of

of the thumb may be placed in contact with the pulps of the fingers by the flexors of the thumb when the median is paralyzed, but the normally acting opponens supported by the abductor and extensors can oppose the thumb and fingers at the level of the last articulations. Rotation of the thumb is an opponens movement facilitated chiefly by the attachment of the opponens to the metacarpal bone and not to the phalanx of the thumb (6). Rotation involves the action of all the muscles of the thenar eminence, the adductor and the long thumb extensors.

Movements of the fingers. Complete flexion of the fingers is produced by the median and ulnar supply acting on the flexors sublimis and profundus digitorum assisted by the interossei and lumbricales. Our observations support the view that all the interossei including the adductor of the thumb are supplied by the ulnar. The action of these mus-

cles, in flexing the first phalanges and extending the second and third, is reinforced by the lumbricales, the inner two of which are supplied by the ulnar and the outer by the median. Forcible flexion of the phalanges by the profundus acting alone, if continued, produces flexion of the second and finally the first phalanges. Atrophy of the interossei results from ulnar paralysis and is not evident in the case of injury to the median alone. The characteristic ulnar griffe (Fig. 11) is more pronounced in low lesions of the ulnar and the mechanism of its production results from the unopposed hyperextension by the common extensors (Fig. 8) of the first phalanges of the ring and little fingers. The two distal phalanges are partly flexed by the pull of the sublimis and profundus digitorum. The action of these long flexors of the fingers in ulnar lesions is unopposed in the second and third phalanges of the fingers by paralysis of the interossei and inner two lumbricales which normally extend these phalanges. The index and middle fingers are not affected in ulnar griffe because of the median supply acting through the lumbricales, which are feeble antagonists of the common extensor action. By supporting the first phalanges of the ring and little fingers of a patient with ulnar griffe, complete extension of the fingers may take place (Figs. 12 and 13). In combined median and ulnar lesions, the patient is able to produce moderate flexion of the fingers by extension of the wrist (Fig. 14). The flexion movement of the fingers, thus performed, is produced by the increase of distance between the fixed points of origin and insertion of the inelastic long flexors, in the act of extension of the wrist. As the wrist is elevated in extension, the fingers are pulled down to a point within the length of the flexors which have been made to assume a curve by the extension of the wrist. Although the flexor profundus is partially paralyzed in high median lesions, the patient is generally able to flex the three inner fingers forcibly, due to the fact that the profundus slip to the middle finger is supplied by the ulnar nerve. The principal disability of a median injury so far as finger movements are concerned is

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The movement desired should take place from the position of rest without a preliminary motion of the antagonist. Errors may be avoided by analysis of the components of the movement

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INFECTIONS OF BONES AND JOINTS¹

By FREDERIC J. COTTON, M. D., F. A. C. S., BOSTON

THE especial reason for bringing forward this subject is not that we have solved—much less that I have solved—the important practical problems presented, but that it is a time of general interest in these problems, a time most opportune for formulating both the problems and the work to be done toward their practical solution. Every active surgeon knows how little under our control these problems have been in the past and is eager to welcome the time when we can deal with them with a reasonable confidence and certainty.

The commonest infective condition is that of bone infection from without, in compound fracture, a problem freshly familiar to many in war wounds.

War experience can not all be transferred to civil practice in this or in other fields but the war work has answered many of the questions that lay open, we are already equipped to save more lives and limbs, and in the future the not unusual cases of chronic wound sinuses should be few. There are cases, of course, of virulent infection and low resistance in which progressive infection, and far-reaching damage and even deaths are unavoidable, but they are rare.

We are not going to follow war routine in civil life. Primary débridement, sometimes overdone even in war, has little place in peace, and in civil life we need not assume infections before they occur, but we are not

going to do closed suturing on doubtful cases any more if we have learned our lesson,—we are going to operate on infected cases frankly and not hope for days that they may recover, and when we operate we are going to do a surgical job.

We have learned that wider cleaning out and drainage than used to be used is a first essential both for limiting infections and for later disinfection, and that disinfection is possible, if wounds are really opened up: first, an approximate disinfection before the final surgical clean-up, then a real disinfection after the clean-up and thereafter a relatively rapid healing. We not only know this can be done but in our better hospitals we are doing it.

Wide opening-up has two functions: first, helping in the disinfection by providing better drainage, minimizing burrowing, and giving access to the disinfectant; second, by giving a better chance to keep track of the necrosed bone fragments in the wound and thus seize the earliest moment for the final clean-up after the bacterial count goes down.

In almost every infected bone-wound one gets sequestra. These must come out before we can get healing and should come out as soon as the line of demarcation is established. This time averages 6 to 8 weeks, but more exactly we learn by seeing or by feeling with the probe the ragged line itself beneath the edge of the granulations. Also we can tell

¹ Read before the Chicago Surgical Society, February 6, 1920.

been ill for 2 years. Clinical examination showed the following: nausea, vomiting, occipital headaches, vertigo; staggering gait, inclining to right; station disturbed, falls backward and to right; ataxia in movements of arms, both right and left; involvement of fifth and seventh cranial nerves, vision of right eye 6/15 plus 2 diopters, postpapillitic atrophy; left eye 6/9 plus 2 diopters, postpapillitic atrophy; Barany test suggests lesion of vermis.

Operative record. June 27, 1914, suboccipital decompression; August 17, 1914, subtemporal decompression; August 25, 1914, ventricular puncture through corpus callosum; September 23, 1914, suboccipital exploration under local anesthesia, large inoperable tumor in pontile angle. Eighty-five milligrams radium buried in growth for 15 hours.

Subsequent clinical notes. The patient was discharged October 3, 1914. The stupor which had been present before the operation continued and upon the patient's discharge 10 days after the operation his condition was regarded as hopeless. Improvement was first noted 6 weeks after operation. By January, 1915, he could go up and down stairs and walk without assistance.

April 21, 1915. No staggering, no ataxia, patella reflexes sluggish, no headache, no vomiting.

February 23, 1917. Since last report there have been signs of recurrence, ataxia left arm and leg; marked asynergia of left arm and leg; station not good, wavers to left and in walking sways to left, some impairment of hearing on both sides, total loss of vision. Second treatment with radium emanations.

Final note. Report from patient's mother, June 13, 1920, 6 years after first treatment and 3 years after the second, states that the patient is in excellent health, although there are still evidences of disturbance of equilibrium.

It is perhaps too soon to make a final report on this case. There is no doubt that the effect of the first treatment was very extraordinary. The patient was *in extremis* and it was not thought he would survive more than a few days or weeks at the most. The tumor was of large dimensions, with ample exposure on the operating table but quite inoperable. That the patient should have been transformed from a bedridden and stuporous condition to an ambulant state would seem to admit of but one interpretation. That there is evidence still of disturbance of cerebellar function may be accounted for on the grounds of permanent damage to the cerebellar tissue by the growth before the treatment was begun. This view is further substantiated by the fact that since the second application the condition appears to be stationary.

CASE 2. Child with evidences of serious disturbances of cerebellar function, chiefly left. Unable to stand or sit, difficulty in talking and swallowing, marked adiadokokinesis, hypermetria, vertigo, headache, nausea and vomiting. Postpapillitic atrophy. Following suboccipital decompression and serial application of radium there was an extraordinary improvement in every particular so that 8 years after first observation the child has been restored to almost perfect health.

E. S. age 10, File No 25492, admitted to University Hospital, December 9, 1913. The patient had been ill 1 year. Clinical examination showed the following clinical findings: nausea, head-ache and vomiting; staggering gait, unable to walk without assistance; paralysis lower part of face (left); difficulty in swallowing, hypermetria and adiadokokinesis in both extremities, left more than right; vertigo; tinnitus; vision of right eye 6/40 postpapillitic atrophy; no swelling; left eye 6/70

10, 1913. Tremendous pressure. The left cerebellar hemisphere almost entirely herniated through the opening when the flap was reflected. The tumor was not exposed at operation.

Readmission to University Hospital February 8, 1915, at which time the patient showed marked improvement. The headaches, vomiting and tinnitus have subsided. From a state of listlessness and apathy she is now mentally alert, wide awake, active, and talks without difficulty. She can sit erect and walk with but little assistance. Vision is improved, and she can read a newspaper. Vision of right eye, 6/15, formerly 6/40, left eye, 6/15, formerly 6/70, a second application of radium was given.

Readmitted to University Hospital, June 7, 1915. The ataxia was less marked, but little hypermetria. The gait was much improved. The patient can walk about the house without assistance. She carries her head more erect.

an
sew and can play on the piano. She experiences vertigo only on sudden change of position, there is no nystagmus, and only slight adiadokokinesis in left arm.

A fourth application of radium was given.

Final report. Dr Homer E. Smith, the physician in charge, reports as follows, June 15, 1920.

"The symptoms of her cerebellar ataxia have nearly disappeared. She can walk without assistance, and with little uncertainty in her gait. She plays with other children and takes part in their outdoor games. The right eye shows a pale disc but her vision equals 8/10 plus. In the left eye (which is divergent), there is a marked atrophy of the optic nerve and vision only 1/10. She goes to school and keeps up in her studies with other children. The inference is that there has been at

regard in bone infections. The scars of the war wounds are usually enormous, and preclude any early clean grafting. Whether after a year or two such operations may be safer I do not know; many of the soldiers are waiting in this hope. It is a long wait.

The civil case averages better and often enough healed compound fractures may be dealt with for non-union just as the simple fracture, but often enough also we meet cases in which wide defects in bone and extensive, deeply adherent, ill-nourished, scars together present the unpleasant problem.

Unfortunately the heightened productive power of the periosteum one sees in ordinary osteomyelitis is here absent, they repair languidly and incompletely and in only too many cases go on to non-union with finished bone-ends and more or less deformity as well. We are not today in a position to handle all these cases with any real assurance of success. One of the things most to be desired in surgery is some way of determining repair toward real bone repair, instead of fibrous tissue, whether the defect be in clean or infected or disinfected bone. Salvarsan, thyroid extracts, the feeding of lime, etc., serve the occasional case, they by no means solve the working problem.

Today we attack it by waiting, with some successes, or we do bone grafts which do succeed but by no means always. These grafts if they succeed do grow, but more particularly they are the starting point for bone-growths about them. May it be that they act in part to supply the lime salts they lose (as successive X-rays show in most cases) to

about bone-formation instead of fibrous tissue growth between bone ends, all would be well. Histologically the two processes start alike—the difference is that in the less fortunate cases the transformation of granulation tissue into calcified tissue, later to become true bone, is lacking.

Is it within the range of possibility to control this? Perhaps. We know that the salts of urine do at times produce calcification with-

in tissue, as to wit, the deposits in ureteral plastics.

Our laboratory workers have told us that magnesium has a stimulant effect on bone production. Some 4 years ago I tried this out clinically on one compound and one closed fracture, both with long delayed union. At all events both did well. At present there is one case under treatment, an open fracture. There seems to be something in this treatment. Practically its value is limited and in closed fractures the hydrogen resulting from the conversion of the magnesium in the tissues is a nuisance.

There is another lead. Following the unsupported supposition that live grafts and boiled beef bone may perhaps be of value primarily as a source of lime, I tried, about the same time as the magnesium, another scheme of interference, namely the local injection of insoluble lime salts. There were only a couple of cases but results were good enough so that now I am back at work, the scheme is being tried out again.

Obviously all my laboratory and experimentally minded friends are going to look upon this as ungrounded in theory, but that interests me but little; the question is, does it work? This can be answered only by clinical experiment and there have proved to be certain technical inconveniences in doing precise work but I hope to report before long for or against. If this does not prove the practical answer perhaps something can be done along the line of urine salts or their chemical equivalent.

I am minded to go further with all three of these methods and hope to see the day when we can cure clean non-unions by grafting, unclean or heavily scarred and therefore prospectively septic cases by depositing nutrient and stimulant stuffs in the gap, whether the gap be open or closed.

The second class of infections under consideration are those of osteomyelitis of the familiar hæmatogenous type, always with us, always a bit unsatisfactory. I should hardly venture on consideration of this much bewritten type of disease, save that the voluminous literature on the subject seems to me a confusion, a sort of Babel of

before we can formulate a technique which has a foundation based on facts and not on empiricism.

In closing I should say that in the 24 cases of brain tumor in the treatment of which radium has been employed, I have not yet seen a single case, known to be a glioma, where radium has had any appreciable effect. The endothelioma is unquestionably more susceptible and hence offers the more favorable prognosis.

My purpose in this brief note is to call attention to the possible achievements of radium emanations in a field that offers many opportunities. I must speak very guardedly in order not to be misleading. I offer in evidence three cases of brain tumor where the growth of the tumor, in the light of the clinical evidence, has been arrested at least, the tumor possibly destroyed, in periods of observation covering a maximum of eight years.

A STUDY OF THE EFFECTS OF RADIUM ON NORMAL BRAIN TISSUE

A PRELIMINARY REPORT

By C. S. WILLIAMSON, A.B., M.D., R. O. BROWN, M.D., AND J. W. BUTLER, M.D., PHILADELPHIA

RADIUM is now recognized as an effective agent in the treatment of certain neoplasms. It is peculiarly adapted to application in cavities where it can be brought into direct contact with tissues. It is now also being extensively employed to advantage by implantation in neoplasms. Very frequently brain tumors are exposed by operative procedure and excision of the growths is found impossible or inadvisable and in such instances the implantation of radium is very desirable. This has frequently been done but without information as to the dosage that may safely be employed without unnecessarily injuring the normal brain structure. Experience teaches us the probable dosage necessary to destroy the tumor, but we have frequently not known whether such dosage could be employed with safety. The range of safety to surrounding tissue is even more important in connection with the brain than in the case of the structures that may be injured irreparably in the treatment of uterine carcinoma.

With the idea of determining, as accurately as possible, the safe dosage, the radius of activity, and the degree of reaction produced by a given amount of radium upon normal brain tissue in a known period of time, this work was undertaken. Because dogs are the

most available animals, they were used. All the operations were performed under complete ether anaesthesia and every effort was exerted to minimize shock. We placed the radium over the motor cortex so that we might be able to observe any functional disturbances as well as the structural lesions. In these experiments 50 milligrams of radium were placed directly upon the brain cortex, and were permitted to remain there for 4, 6, 12, and 18 hours.

After preparing the field of operation, a semi-circular incision was made, beginning slightly above and behind the eye, extending 1 centimeter beyond the mid-line and ending anterior to the ear. The skin flap was reflected and a second incision made through the temporal muscle five-tenths centimeters from and following its line of attachment to the skull. The muscle and periosteum were reflected downward and a section of bone 2 centimeters in diameter was removed, slightly above and 1 centimeter in front of the ear. The dura was incised and the radium capsule introduced beneath it. The capsule measured 2.5 centimeters in length and it was found that it could be inserted most easily in a downward and forward direction. The bone fragment was not replaced, the anaesthetic discontinued and the wound

growth, even if they are of glass, just as bone-plates of steel do in clinical experience

Eighth, repair power after operation is adversely affected by infection but probably also by exposure. Unprotected bone out in the wound rarely covers well. In part this may be a matter of drying and chilling.

Ninth, repair of new bone that has been long finished, so to speak, is low. Summons' statement of the poor growth power to be looked for after a year is at least approximately true. Also it is true that repair power is lower in adults. Capacity to repair also seems to cease earlier after infection in adult cases, particularly in and after middle life.

DIAGNOSIS

Any case that shows localized deep bone tenderness with fever, *even without severe pain*, is *presumptively* osteomyelitis.

Edema may be present or may not. The fact that onset is slow is no bar. History of trauma some fortnight or so earlier is usual though not, of course, conclusive.

Any case that shows an abscess *on* the bone *without clear cause*, even if there is no suggestive history, must raise the question of drilling to the marrow to explore. I have made more mistakes staying out than going in, and have had no case, and have seen no case, of harm from drilling in out of a cleaned-up abscess into the marrow, not a case of introduced infection.

Accurate diagnosis in these cases is still beyond us.

The X-ray is not of much help but it is not true that the X-rays of these cases are "negative." They do show a fogging and a disappearance of the clearly outlined marrow-cavity. They are, however, not easy to read and this appearance may not be clear until after the time at which the bone should be drained.

The thing to do, often, is to go ahead and explore, even if the diagnosis is not an absolute certainty. There is here a chance for surgical hysteria. Not a half-dozen years ago, a nationally known surgeon advocated the thorough internal curettage of the infected marrow cavity with gauze strips pulled to and fro. The idea in this is not quite clear!

Osteomyelitis is not a massive marrow embolism but an infection of the marrow which by infection and *consequent internal pressure* deprives the shaft of the bone of nutrition and so determines bone necrosis.

Why one should aid this unfortunate bit of pathology by stripping away from the cortical bone every chance of nutrition and recovery after drainage is not clear.

What one should do, of course, is to relieve the local abscess, relieve the local tension, avert the ischaemic necrosis, save the threatened bone. In other words, *drain!* If one drains in an acute or a subacute case, one averts the catastrophe, one averts massive necrosis and limits the damage to a juxta-epiphyseal infection, to be dealt with *secundum artem*.

Late cases are neglected cases or cases misunderstood because of pathologic or other complications.

The clinical problem as presented may be summed up as follows:

Any tenderness of bone is suspicious.

Any bone tenderness with fever is very suspicious even without pain.

Any abscess about any bone is doubtful.

Any persistent sinus to or toward bone warrants investigation. Often the X-ray will tell more than the probe. Do not *assume* an invasion of periosteum alone in a chronic case any more than in the acute.

Any long continued bone soreness, especially if with well-localized thickening, or with tenderness to percussion, warrants suspicion of localized infection. The X-ray may show a Brodie abscess without a typical history or with perhaps the story of long continued *occasional* lameness as the only complaint. The X-ray, properly read, tells the story. The source of confusion is syphilitic disease. Usually the X-ray will differentiate readily. Syphilis in bone is rarely a destructive process; if it destroys at all it erodes from the periphery. This picture may be confusing as may the rare cases of periosteal sarcoma that give a subperiosteal erosion before obvious tumor appearance. Scurvy in children with periosteal overgrowth may confuse, but this again is not a destructive process. Tuberculosis should be clearly differentiated



Fig 3 Dog No. 4 Photomicrograph showing sharp line of demarcation between exposed and healthy tissue, 12 hour exposure to 50 milligrams of radium (low power)

Microscopically a necrotic area was found 0.5 centimeters deep. Extending along the surface for a distance of 0.5 centimeter from the point of contact of the tube is a strip of degeneration 1 millimeter deep. All of the cells in this necrotic area are completely destroyed, and their fragments are scattered throughout the zone, but are in greater abundance at its periphery. Surrounding this area of degeneration is a circle of hemorrhage but in this hemorrhagic zone the degenerative area is not so sharply circumscribed, but fades more gradually into the normal area. In the necrotic area the blood-vessel walls are decidedly thickened, in the hemorrhagic area their walls are ruptured, and beyond this there are evidences of hyperemia. In this section also there is no indication of repair.

V. Dog No. 6: an 18 hour exposure to 50 milligrams of radium. He made an uneventful recovery, and at the present time, after the lapse of 7 weeks, shows no symptoms.

VI. Dog No. 7: a 12 hour exposure to 50 milligrams of radium. He made an uneventful recovery from the immediate effects of the operation but on the second day showed some motor disturbances; at times convulsive and incoordinated movements of the limbs, at other times movements athetoid in character with intervals of quiet. On the third day he was chloroformed. Autopsy revealed an encephalitis.

DISCUSSION

The application of radium to the brain of the dog under certain limitations as to time and strength has a destructive action, but



Fig 4 Dog No. 5. Photograph showing gross area of destruction after an 18 hour exposure to 50 milligrams of radium (low power).

produces no clinical symptoms. The radium, in these experiments, was enclosed in a platinum tube of approximately 0.4 millimeter thickness, which removed the α - and practically all the β -rays, but permitted the passage of the γ -rays.

The difference in the effects produced at different distances from the tube is of extreme interest. Thus, within a radius of 4 millimeters of the tube a 12 hour exposure produces complete destruction of the brain cells and the interstitial tissues with the products of degeneration scattered throughout, but more thickly at the periphery. The blood-vessels within this area, on the other hand, show marked thickening and hyalinization of their walls without rupture. Surrounding this there is a zone 1 millimeter wide in which many of the cells are not completely destroyed but do show evidence of degeneration. In this zone the blood-vessel walls are not thickened but degenerated. As a result of this degeneration they rupture, and one sees an encircling zone of hemorrhagic infiltration, 1 millimeter in width. This zone is very well outlined and ends abruptly in what appears to be normal tissue, in which the only evidence of the reaction to radium is the slight hyperemia without changes in the blood-vessel walls. In none of the sections was there any cellular infiltration except from the hemorrhage, and no evidence of beginning repair.

The time required to destroy malignant tumor cells will depend upon the milligram hour dosage administered on the one hand and on the other the distance of the outermost cells from the radium and the susceptibility of the tumor cells to its action. It has been proven that 600 milligram hours with γ -rays

trough drainage, wide open cleaning of sinuses, Carrel-Dakin to a decent cleanliness, and then a second deliberate operation to start repair, form the best routine.

Seventh In late cases with open drainage, in cases of the last group after the first operation, and in inveterate cases, often already operated on once or many times, the question of choice of operation is not so simple. One has less repair power to depend on than in earlier months and sometimes very complicated pockets and many fistulae.

In these cases one may do the very radical thing, as just sketched, provided the field can be laid wide open and thoroughly cleaned.

My best success, however, in this type of case, has been with the bone-wax technique, used not as Moosetig-Moorhof meant it as a permanent filling, but as a temporary protective filling. Given a cavity well drained and moderately disinfected, preferably by chlorinization, one may operate, lay the cavity wide, and treat all of it or such portion of it as is accessible to real cleaning, by immediate disinfection, then bone-wax filling. In this way pockets and troughs may be filled and will often heal even if sepsis recurs in the soft parts in the cleaned sinuses. No small part of the success of this depends on starting with a wide-open bone wound and with a fresh surface to the cavity, disinfecting it most liberally with 95 per cent carbolic for 1, 1½, even 2 minutes, before turning in the alcohol, drying it as well as may be (I have never had a hot-air drying machine), plugging it with wax up to bone level, and packing the wound in the soft parts with alcohol-soaked gauze and keeping it so soaked. Or Dakin's fluid may be used in the open wound over the wax without disadvantage.

Presently the wax is extruded, slowly as a rule, leaving behind it not bare bone but firm granulations. This is the rule even if some pus forms behind it, which usually does not happen. Rarely one clears out the wax, later, after the bone floor is covered with granulations.

This technique has been most generally recognized in treating the small cavities—the Brodie abscesses—in which one may make what I have called a dentist's cavity, firm

walled and visible, but I am using it more and more in even the big cavities particularly in the class of cases in which a considerable trough or an end pocket cannot be avoided.

With this method one does not get fresh bone infections, or the troublesome patches of inert, avascular old involucrum at the bottom of persistent sinuses. Repair is slow but steady; the dressings are simple; there is no pus absorption, and the patient can be up and about early. Just how this method works is still debatable.

During the winter a year ago we tried out in U. S. A. General Hospital No. 10, a considerable series of chronic bone-pocket infections from old wounds using this technique with various wax mixtures with little to choose in results, which results were nearly uniformly good. Evidently it makes little difference whether one uses the Moorhof wax or the straight wax of the army or Lukens' (Horsley's formula) or the paraffin and oil of sesame originating at No. 10. We happen to have had less good luck with the Beck pastes. Probably all act on the same principle and probably it is the same thing that has proved useful with the paraffin for burns or Morrison's "bipp" for open wounds, namely a protective layer over reasonably clean wound surfaces.

Certainly a wax-layer does protect freshly denuded bone from: (a) air-drying, (b) chilling. (c) re-entering infection from without.

Perhaps these three things are all; given a clean wound perhaps that is enough.

Permanent plugging, or attempts to close the soft parts over wax or over anything else, do not appeal to me, but I am still firmly of belief that the wax treatment has a place and that in the really old cases I can do better with it, or rather, do with less failures, than with any form of operation even reinforced with careful Dakin treatment.

At Hospital No. 10 we found the cases under Dakin treatment alone did well for a bit and then often left us at a standstill, active repair ceasing. In some cases we chose a time of minimal bacterial count, re-cleaned and filled with the paraffin-wax. We got results but not as uniform results as in the cases first cleaned to bone then sterilized with

Up to the present time nothing has been accurately determined as to etiology, but it is not unreasonable to assume that some one, or more, of the endocrine glands plays a part. In cases of neurofibromata of the peripheral nerves, sarcomatous changes may occur, usually of the myxosarcomatous type, and not disposed to form metastases (2). Neurovascular changes may occur, and one of the cases which I report may have presented such a condition.

It is not the purpose of this paper to enter into a detailed description of von Recklinghausen's disease nor to advance theories as to its causes. What particularly concerns us are such accompaniments of the disease as demand surgical interference. Of these the most conspicuous are neuromata, or more properly speaking, fibroneuromata arising either from the nerve sheath or neurilemma, or from the nerve itself. Unfortunately for the patient, these fibroneuromata are often multiple and invade either a single nerve in large numbers, or are disseminated over various peripheral nerves.

The type known as plexiform neuroma is much less common and may be found in the central nervous system, notably the brain where it may take on the appearance of a glioma. The tendency of some of these neuromata to undergrow sarcomatous change has already been noted. In the event of a single large neurofibroma affecting a single nerve trunk, symptoms of pain and interference of function may warrant surgical intervention. Such a condition is presented in one of my cases.

Von Recklinghausen's disease is not of extreme rarity, and quite a number have come under my notice. In only two have the complications been of a surgical nature, and I take the liberty of relating their history.

CASE 1. Jennie J., age 58, female, white, admitted Cincinnati General Hospital, May 27, 1919; discharged August 4, 1919. The patient is a poorly nourished, poorly developed woman. The facial expression is indicative of low grade mentality; ptosis of both eyelids; pterygium in both eyes; typical picture of von Recklinghausen's disease; multiple neurofibromata over face and body.

Present complaint. Generalized aching, poor eyesight lumps on body.



Fig 1 Case 1

Present illness. The patient cannot give accurate history, especially as to time and place. She says her eyesight has been poor ever since she was 11 years old, when a doctor operated upon her, cannot state definitely when the growth over the cornea began. The mentality is evidently very low. The lumps on her body began some years ago as "just simply lumps and kept coming," until now they are spread over the entire body. Some lumps have grown larger than others, but none has caused her any trouble except a very large swelling in the under side of the left arm. This causes pain to pass down along the ulnar side of the arm into the fingers innervated by the ulnar nerve. The pain is more marked when the patient does heavy work, such as washing, etc. The patient now complains of indefinite aching sensations throughout the back, limbs, and anterior part of the chest. No definite type of pain can be elicited but simply a dull aching pain.

The patient has headaches in the occipital region. The headaches are severe, accompanied by nausea and vomiting, last 2 or 3 days, and occur "every once in a while." The patient has difficulty in walking because of the eye conditions. She occasionally suffers from oedema of the limbs, and slight shortness of breath. She does not urinate at night and has no burning. She has a slight hacking cough and expectorates a thick tenacious sputum in moderate amounts, occasionally expectorating a bloody sputum. She has no night sweats. The appetite is poor. The patient has difficulty in swallowing and occasionally suffers from gastric distress. The bowels are irregular; she uses salts occasionally. She has no jaundice and no melæna.

In fresh cases without bone lesions wash out very thoroughly—I still use corrosive 1:15000 following salt solution—and suture the capsule water-tight, leaving the outer wound open, mobilizing after a few days. There is a moderate effusion for a few days, then return to a joint either normal or with few adhesions.

In cases in which suture is impractical, clean and use the Dakin treatment—doing a secondary suture if the count quickly comes to justify it.

In case of failure mobilize as the joint heals up, making sure of very free drainage the while, retaining all the motion one can.

At worst, and there will be a few cases, lay the joint wide open with multiple incisions, use Dakin solution, mobilize only when the vital danger is past, let the joint fill with granulations, and save what one can in motion, doing secondary operation as needed without immobilization.

I have lately had a case of arthroplasty of the elbow with a free fat transplant that was lost late, without frank sepsis, in which this routine of early disinfection and later mobilization before healing has given normal forearm rotation and about 50 degrees of hinge motion, and two primarily infected elbows too late for washing that have done admirably.

Here again we have a practical joint if no real joint—a distinction of no importance.

The question that with me is still open is whether it may not be wiser to take a chance and do frankly what Willems did, open wide and mobilize to the limit from the start, with or without the help of Dakin irrigation. So far I have done this but once—with success in the one case. I have not met the answer to this. Probably only considerable experience will decide whether this very radical handling is always wise.

So far we have considered what may be done to save a joint and to save a mobile joint. Not all, of course, can be saved with motion; grant me a moment to consider the possibilities in late cases with adhesions limiting motion.

Arthroplasties of an effective sort are apt to be impractical on account of the broad scarring about the joint with the great chance of slough and sepsis and the difficulty in securing covering without tension so that even without sepsis one loses fat by liquefaction and drainage.

Similar limitations circumscribe the arthrotomy operation with oil injection and firm capsule closure done a good deal some years ago by Brackett and others. These operations are ideal only with clean traumatic adhesions and the gonococcus and non-suppurative septic type.

Failing these, are we helpless? I think not in any case that can be broken up or stretched. *Brisement forcé* has a place still, or again, in our work, but it must be a *brisement* carefully done, supplemented by fleeting fixation in the optimum position for the given joint, followed by early, careful heat and massage and active not passive movements.

Repeated breaking-up does nothing, but after one session later mild stretching under gas is not contra-indicated, with more physiotherapy to follow.

Realizing that pain is the bar to retaining motion once gained, I have tried out once with some success the effects of enduring anaesthesia with quinine and urea solution in and about the joints. This should render late manipulation easy. Reaction of tissues except as expressed in pain is not usual after such *brisement*. This is good theory; someone else expert in local anaesthesia may perfect a real working technique before I do.

In closing let me recognize frankly that this is not a record of cases or statistics but a general review. May I hope that there has been a summation of what means we have at hand for the fighting of bone and joint infections, a partial classification of methods according to indications, new at least in part, an indication of needed lines of study and of interpretation of work already done, and a few suggestions as to methods to be worked out and tested for good or bad by you, or by me, or another.

had been destroyed by the growth, or that the fibers had been so separated that there was more of the normal coherence. On section of the mass—a complete longitudinal section—it appeared that there was a capsule quite distinct from the mass of the tumor, and that the latter was composed of fibrous tissue, which according to its position was clear white and hyaline (in the center); oedematous and translucent (scattered). At one point near the pole to which the nerve fragment was attached, in the capsule, was an area of calcification. There was no microscopic evidence of nerve tissue. Tissue for histologic study was removed from four different points to represent all depths of the tumor mass.

The histologic sections all show practically the same changes in each. Such variations as are present relate to degenerative changes and to cellular infiltrations. The whole tissue is composed of fibrous tissue with no discoverable neural tissue. In the solid, firmer portions of the tumor this fibrous tissue is richly cellular and is infiltrated with numerous small round cells. In the softer portions the fibrous tissue which is formed of larger and smaller bundles is poor in nuclei and the bundles are swollen and oedematous. There are a few pale giant nuclei due to the oedema. In the yellowish areas the fibrous tissue is undergoing degeneration and in these areas lime salts are deposited in smaller and larger amounts. There are numerous microscopic concretions. The capsule is composed of pure fibrous tissue.

CASE 2. N.D., age 50, female; admitted to Cincinnati General Hospital, March 9, 1917. The patient is a fairly nourished, fairly developed white woman. The facial expression and manner are suggestive of psychical peculiarities. The family history is irrelevant. The patient has had the usual diseases of childhood. Her health is unusually good. For years she has had scattered over her body numerous small tumors, some sessile, others pedunculated. She presents a typical picture of fibroma molluscum or fibroneuroma.

For twenty years the patient has noticed a swelling in the right upper gluteal region, what she thought was fat. On February 8, at 11 p. m., the patient noticed that the swelling had become larger and was becoming painful. Since then it has continued to increase in size and is very painful. It now presents a large and fluctuating tumor mass. Ecchymosis is present over the tumor mass. The blood count shows red cells 4,240,000; white, 14,200. The pain in the tumor is increasing and involves the whole right thigh. The tumor was aspirated and a dark red fluid obtained. Ice caps were applied. The patient was under observation for 5 days. The temperature ran from about normal in the morning to from 100.6° to 101° in the evening.

March 16, the patient was operated on. The mass of apparently fatty or fibrous tissue was removed. Hemorrhage was very free. After the ligation of branches of the artery the wound was closed with rubber tissue. The patient was returned to the ward. The wound continued to drain but only in slight amounts and the discharge was of a faint odor. The patient's temperature ran from 100.4° on the third day and remained at that level when on April 10, her temperature ran up to 104°. She suffered an attack of pneumonia.

The tumor is a mass of tissue filled with hemorrhage, which is collected into a clotted mass. It is not in aneurisms. There is a mass of the tumor tissue per se, but merely fibrous tissue in association with the hemorrhage. There is no neural tissue.

This rather large tumor is collected from a large mass. I believe that I have seen a growth was the large neurofibroma. The neurovascular changes in mind one of the sometimes suggestive am not yet confirmed. It is not the case.

One feature of the tumor is its location on the right upper gluteal region, accompanied by a large swelling in the left inguinal region. It is upon and forward in the lower fibers but not in the upper. This led to the tumor with a history of a swelling in the right upper gluteal region.

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This core is transformed into a spread-out, flat structure in the flat bones but occupies the same relative position to the cortex. If one saws through a bone, the outer layers are found compact while the medulla is found to be composed of an interlacing of thin spikes and spicules having attachment to the cortex. The difference in these two portions is pronounced, the cortex being composed almost entirely of solid matter while the medulla contains large spaces between the spicules, in which there are fat, marrow cells, thin walled blood-vessels, and a considerable amount of blood. However, close inspection shows that the union between these parts is not an abrupt one and that it is often impossible to say at what point the marrow becomes the cortex. However, in the femur and humerus and to a less extent in the tibia a definite medullary cavity exists in adolescent and adult life—the shaft of the bone being hollowed out more completely than the ends. This cavity contains true medullary tissue: fat, lymphoid cells, and hæmoblastic centers. On breaking a long bone transversely, one is able to see that even the densest part of the femur is pierced by tiny canals each containing a blood-vessel and the larger ones containing lymphoid tissue. These canals are smallest in diameter directly beneath the periosteum where they are about $1/1000$ of an inch in diameter and as one progresses toward the medulla, they gradually increase in diameter until at the place where the cortex merges into the medulla they are about $1/200$ of an inch in diameter. In the medulla itself they attain a very much greater size ($1\frac{1}{2}$). These canals are nothing more than the tubes in which the blood-vessels lie and are called haversian canals after Clopton Havers an English physician of the 17th century. Each haversian canal is surrounded by a series of concentric columns of bone which columns are divided one from the other by concentric rings of single, little, thread-like processes which communicate from one cell to the other and with the central tube of the haversian canal. These cells are called the lacunæ and their thread-like processes are called canaliculi. The concentric layers of bone which are really fused into one

column and the adjoining columns which are fused together making a continuous plate, are called lamellæ. Between the lamellæ and between the concentric groups of lamellæ, one finds here and there irregular spaces which evidently are a result of the absorption of hard bone. These spaces are called haversian spaces. Virchow (2) says that each of the cells occupying the spaces between the lamellæ is nucleated and Kolliker (3) is authority for the statement that some of the processes from these cells are connected with the periosteum and undoubtedly they also communicate freely with the blood-vessels of the haversian canals.

It will be seen from this survey of the structure of bone that neither the cortex nor the medulla should be considered a crystallized or an inanimate substance. As a matter of fact one has a better conception of the true nature of bone, if he considers it as a deposit of organized mineral salt between the spaces of a finely-branched system of blood-vessels. Not only is the entire bone permeated by canals containing blood-vessels and living cells absorbing nourishment from these blood-vessels, but lymphatics also most probably exist (4).

The periosteum is also very vascular and is a rather coarse, fibrous membrane particularly where it affords tendinous insertions. It can be divided microscopically into three parts; the one in immediate contact with the cortex of the bone, consists of strands of fibers containing quite a number of granular corpuscles particularly in the young animal. These corpuscles are precisely the same as those one finds bordering the haversian canals, and it is possible that they are similar to the bone corpuscles found in the lacunæ.

Surrounding this division of the periosteum is a layer of elastic fibers, and the outer part of the periosteum again becomes composed of white, fibrous strands containing many blood-vessels which ramify and prepare to enter the openings of the haversian canals of the cortex before they penetrate the elastic layer of the periosteum. These blood-vessels in the periosteum appear to have some muscular tissue in their walls but the vessels which enter the bone are devoid of muscle (except

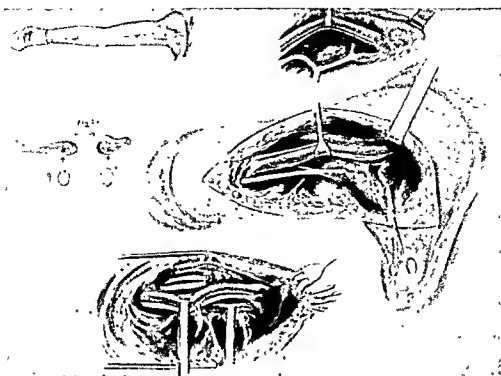


Fig. 3 Division of right musculospiral nerve above branches to triceps Complete loss of extension of forearm

question. Frequently the movement normally executed by the paralyzed muscle of the first order is accurately replaced by the action of subsidiary muscles supplied by a healthy nerve. The contributory action of these subsidiary muscles may appear only after paralysis of the muscles primarily responsible for the movement, and under such conditions the motor function of the normal neuromuscular mechanism may be closely

imitated. Substitutionary muscle function or the "supplementary motility" of Letievent has been carefully studied in the peripheral nerve lesions of the late war. Practically all of the common substitutions were noted and most of them repeatedly observed in patients of this series. Months of intelligent effort on the part of the patient had developed the replacement of function by the substitutionary muscles to a confusing degree in many cases.

In the examination of voluntary movement, Tinel's (1) suggestion that the limb be placed in a position to abolish the opposing force of gravity, is very pertinent; otherwise feeble movements of a recovering muscle may escape observation.



Fig. 2a Musculospiral paralysis of the right arm with paralysis of brachioradialis. Cut to left shows normal action of the brachioradialis in forcible flexion of forearm



Fig. 4. Flexion of the forearm by the pronator radii teres in patient with paralysis of the musculospiral and musculocutaneous.

in all its strains, the typhoid bacillus, the pneumococcus, the colon bacillus, the Klebs Loeffler bacillus and others, have all been found in this disease, so that it is quite evident that the disease is not dependent on a specific organism. Neither is there any proof that any particular strain of organism exercises a selective action for the bone marrow.

INCIDENCE OF DISEASE

Osteomyelitis occurs most frequently in the adolescent boy. In a series of 104 cases at the Copenhagen Hospital, it was found that boys were affected three times as frequently as girls, that the bones were affected in the following order: femur, 39, tibia, 31 and humerus, 9, fibula, 7, radius, 4 and ulna, 2. Our experience confirms this sequence.

It is interesting to note the greater frequency of the femur since this bone has more nutrient arteries entering it than any of the other long bones. The long bones are much more frequently involved than any of the others. The infrequent incidence of acute infectious osteomyelitis in the vertebræ is interesting when compared with the incidence of tuberculosis of the vertebræ, and in this connection we would like to point out that perhaps there are many cases of the disease in this region which are incorrectly diagnosed until spinal meningitis is manifested and as such proves fatal.

There is no doubt that trauma predisposes to the localization of the condition at the site of bony contusion. This is the true explanation of the greater frequency of the disease in boys, although the latter are also more subject to exposure.

The disease often follows exanthematous fevers, typhoid fever, pneumonia, acute pleurisy or the presence of a hidden focus of infection anywhere in the body. When following these diseases it is plainly the result of a hæmatogenous transportation of the germ. It is believed that the presence of infected tonsils, infected teeth, disease of the middle ear, etc., are often

bacteria at stage, it sometimes is only a manifestation of a septicæmia or a pyæmia, and in these most

serious conditions, multiple foci often exist. However, the disease does not necessarily indicate this grave condition.

PATHOLOGY

Early in the acute attacks the medulla is congested centering about the focus of infection. The periosteum overlying the involved region is hyperæmic, pinkish in color, and heavy with œdema. It feels tense and rubbery, but there is no actual pitting as one sees accompanying inflammation in the subcutaneous tissues. On separating the periosteum from the bone, bleeding is more evident than it is in the normal condition, indicating that the tiny blood-vessels which enter the haversian canals from the periosteum are dilated in their attempt to carry an extra amount of blood to the injured area. One notices this hyperæmia in the cortex itself in some cases when the marrow cavity is opened, for the congestion is quite marked. The normal fat tissue which ordinarily will not flow has a melted appearance and oil may even be seen oozing from the marrow spaces. At this incipient stage one may find no pus whatever, and it is during this time that operation accomplishes the most good, since if the medulla is well drained at this time, the infection may be checked absolutely so that medullary and cortical necrosis do not occur at all. One may discover this stage on the first or second day but as a general rule, abscesses are present within 24 hours of the onset. The abscess centers about the initial infarct and, if not seen until considerable pressure has been developed in the medulla, secondary abscesses will be found often at quite a distance from the primary focus. It is not at all uncommon to find the entire medulla of the bone full of pus. At this stage of the disease which may be encountered at any time after the first 12 hours, one frequently finds subperiosteal abscesses as well, which have developed from the medulla through the haversian canals to the subperiosteal region or vice versa.

Epiphysitis: The epiphysis becomes involved in 12 to 15 per cent of the cases and between the second and seventh day of the disease. When the epiphysis does



Fig. 10. Abduction of thumb in right musculospiral paralysis



Fig. 11. Characteristic griffe in low lesion of ulnar.



Fig. 12. Ulnar paralysis. Note griffe atrophy of adductor of thumb and digital interossei.

ments of the upper extremity be studied consecutively from the shoulder to the hand. In my observation of paralysis about the shoulder girdle and upper arm, substitutionary muscle function was not often noted. There was one patient, however, with complete paralysis of the deltoid, who was able to raise the arm above the level of the shoulder (Fig. 1). This is an unusual substit-



Fig. 13. Same patient as in Figure 12, showing complete extension of distal phalanges when hyperextension of proximal phalanges is overcome



Fig. 14. Complete interruption of median and ulnar in upper arm. Flexion of fingers by extension of the wrist



Fig. 15. Complete paralysis of all median muscles, due to anatomical interruption of nerve in upper arm. By extending the wrist the patient is able to make considerable flexion of the index finger

tionary action brought about principally by the supraspinatus in conjunction with the

Granulation tissue is more generally found growing from the medullary region than from the periosteal region, and it seems that the chief efforts from the core are directed toward the removal and destruction of sequestra and bacteria, while the efforts of the circumferential tissues seem to be directed to

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the acute process has been cut short by surgical intervention or whether nature has accomplished the overthrow of the acute infection. In either case the successful outcome will have been accompanied by the creation of an exit for the pus, so that in the later stages one sometimes finds sinuses leading from the sequestra to and through the skin. If these sinuses are the result of the spontaneous evacuation or of insufficient incisions through the periosteum in draining the abscesses they may be very long and devious. An abscess arising in the medulla at one end of a bone may not find egress from the interior of the bone until it reaches a point quite a distance from its origin. Here it breaks through the cortex to the subperiosteal region where it may travel still further from the original focus before it makes exit through the periosteum into the fascial planes overlying. This is most likely to occur near the insertion of a tendon and from this point the pus generally travels along the tendon sheath toward the surface where, after a superficial abscess is formed, rupture occurs. Frequently the spontaneous sinus has a direct course to the surface and when this is true it resembles the sinus resulting from surgical drainage. In either event the sinus in the chronic stages is lined by granulation tissue. The granulations which spring from the interior of the involucrum together with those that line the sinus pour out a thin chronic discharge. Often the deeper granulations assume characteristics which have led French writers to call them "fongosites." These "fongosites" are overgrown, poorly nourished, oedematous masses—when cut they do not bleed as healthy granulation tissue does. They have a sickly gelatinous appearance and almost always indicate the pres-

ence of a sequestrum. When the sequestrum has been dissolved, discharged, or removed, the cavity of the involucrum fills slowly and incompletely with these granulations depending from the lining membrane of pseudo periosteum. These involueral cavities persist for great lengths of time and seldom fill in with healthy tissue. As time goes on the involucrum becomes very dense, and this is particularly true where there have been multiple small cavities and sequestra while the bone at a little distance suffers an atrophy. These two conditions may be seen in the same bone or one or the other may be present alone. The sclerotic condition is termed condensing osteitis while the other is rarifying osteitis.

The pathology of the chronic condition which we have described is generally absent altogether following thorough primary surgical interference, but these changes are so frequently present they must be described.

In considering the pathology of this condition, one must also remember that the overlying soft parts may suffer changes dependent upon infection, disuse or deformity, and likewise contiguous joints may suffer from actual infection or secondary reactions.

SYMPTOMS

Intense pain is the most striking symptom of acute osteomyelitis—pain so severe that the patient's perception of one's intention to touch the limb elicits agonizing shrieks. In severe cases the vibration of a bed from people walking near by causes pain and the slightest motion of the affected limb is intolerable. The pain may be preceded by, but generally precedes, a high fever, a rigor or a succession of rigors, general toxæmia, and sweating. Soon the affected limb becomes swollen, heavy, and inflamed; the swelling is generally diffuse, as when the femur is involved the whole thigh becomes tense, red and tender. In the leg or forearm the œdema is apt to be most pronounced over the affected bone. The joints are usually not swollen nor tense in the first few hours but may rapidly fill with serum and result in the appearance of an arthritis; in these cases the limb may be held in the typical positions of the various arthritides.

quadratus supplied by the median. In paralysis of the median above the elbow, no cases of substitution of normal pronator function were seen. The brachioradialis is capable of bringing the forearm to the neutral position; that is, midway between pronation and supination. Rotation of the radius internally beyond the neutral position was invariably the result of the action of the muscles normally responsible for the movement, and was not observed as a substitutionary movement.

Supination. Supination of the forearm with the elbow flexed is the result of the action of the biceps and supinator brevis. The brachioradialis is not a supinator of the forearm. It enters into this supination and can rotate the radius to the line of the neutral position, beyond which further supination is accomplished by the biceps and supinator brevis. With the forearm extended and external rotation of the upper arm by the muscles of the shoulder forcibly prevented, the action of the biceps as a supinator is generally abolished, although this point is contested by Woods (2), who maintains that even with this precaution the biceps may cause supination.

Movements of the wrist. Flexion of the wrist depends normally upon the action of three muscles, two of which are supplied by the median and one by the ulnar. Interference with the palmaris longus and carpi radialis (median supply) does not abolish flexion with deviation to the ulnar side by the carpi ulnaris (ulnar supply). Anatomical interruption of both the median and ulnar nerves would suspend flexion of the wrist, but for the considerable substitutionary flexion brought about by the extensor ossis metacarpi pollicis supplied by the musculospiral (Fig. 5). This substitution can be easily detected in median and ulnar lesions by passively moving the wrist to a position of hyperextension. Action of the extensor ossis with the hand hyperextended does not produce flexion of the wrist, but on the contrary assists in maintaining the extension. The extensors of the wrist are innervated by the musculospiral nerve acting principally through the extensor ulnaris and the short and long radial

extensors. The communis digitorum and extensors of the thumb also participate in extension of the wrist. In musculospiral lesions above the elbow, it has been frequently observed that the patient could elevate the hand by making forcible flexion of the fingers. This observation has been made by Benisty (3) and others, and was repeatedly verified in our experience (Fig. 6). The requirement for the dorsal elevation of the hand under such circumstances is a slight shortening of the extensor tendons (Fig. 6a). The movement cannot be accomplished, as pointed out by Pollock (4), if a considerable degree of hypotonia exists (Fig. 7). The army splint in common use for complete musculospiral paralysis is no doubt largely responsible for the patient's ability to execute this movement which is easily explained upon a simple mechanical principle as follows: the distance between the origin and insertion of the shortened extensors must be diminished to enable the patient to make forcible contraction of the fingers with muscles supplied by the healthy median and ulnar nerves. The distance necessary to enable the patient to make a fist is gained by the compensatory elevation of the hand. This explanation appears more logical than that offered by Hunt (5) based on the hypothetical projection through the peripheral nerves of differentiated tracts from the cortex and striate body.

Wrist adduction and abduction are the result of combined action of the extensors and flexors of the joint, although a certain amount of adduction is possible in paralysis of the extensors through the action of the flexor ulnaris. This adduction, however, is incomplete and faulty, and is accompanied by ulnar deviation. The extensor ulnaris if acting alone is capable of effecting slight adduction without the assistance of the flexor ulnaris; whereas the radial extensors acting alone produce abduction with extension of the wrist (Fig. 8).

Thumb movements. Flexion and extension of the thumb are not effectively compensated when the primary muscles for these movements are paralyzed. A slight dorsal pull on the distal phalanx may occur as a substitution for the action of the paralyzed extensor longus

later stages of the disease when bone cavities, cysts, and sequestra exist are readily detected by the X-ray

PROGNOSIS

The prognosis of the acute disease is always grave. When death occurs it is generally during the acute condition, and one finds pyæmia, infarcts in lungs, kidneys, liver, brain, and vegetative conditions of the circulatory system as well as multiple foci of infection. These conditions may be the result of an unattended osteomyelitis but often are concomittant evidences of hæmatogenous infection from some common area.

Early diagnosis with immediate surgical treatment modifies the gravity of the condition considerably, but one should never predict that a limb with unimpaired function may result.

Often when the focus is virulent and extensive and early treatment has been neglected, when the general reaction is extreme, (the type of case which appears to have been "hit by a sledgehammer"), amputation has been recommended as offering the best hope of recovery. In our experience this extreme measure has never seemed indicated, although patients have frequently been sent to Augustana hospital for this last hope. In these cases it has always been possible to change the condition by laying open the periosteum and overlying soft tissues, applying an enormous hot moist boric acid and alcohol dressing covered with a large rubber cloth which serves the purpose of retaining heat and moisture and at the same time acting as a splint, and by applying a therapeutic lamp over this dressing. In a small group of very severe cases it is advisable not to chisel open the medullary cavity of the bone at the primary operation.

With early and thorough surgical drainage one may not expect the process to spread into the neighboring joints, even though synovitis already exists in them. When the focus is close to the epiphyseal line, separation of the epiphysis may follow with the resultant loss of the power of growth from that end of the bone.

At times the extreme virulence of the disease results in the destruction of the

osteogenetic powers of the tissues so that the bone will not regenerate. Rarely, the opposite result obtains, i e., bony overgrowth follows the chronic type.

With early surgical intervention within the first few hours of the disease and in the absence of pyæmia, the focus being well away from the epiphyseal line, one may expect recovery with a functioning limb even in extremely serious cases after a long period of disability and with the remote prospect of several secondary operations for the removal of sequestra and for the obliteration of the sinuses.

TREATMENT

Acute infectious osteomyelitis does not seem to have been recognized until comparatively recent times, the explanation probably being that the abscesses finding their way to the surface, obscured the deep pathology and the cases were treated simply as very grave attacks of boils.

The treatment of the acute condition so commonly practiced until recently with poultices, blisters, fomentations, sedatives,

method of treatment is surgical drainage, splitting and reflecting of periosteum over the entire distance and at least 2 centimeters beyond and on each side, and opening the medullary cavity freely in the area involved. Combined with or following this, the part

moist dressings seems a valuable adjunct to this procedure and any of the above mentioned remedies may be employed as accessions without harmful effect except treatment by manipulation. The use of therapeutic lights over the limb is a very valuable adjunct to drainage as they supply heat without the necessity of disturbing the limb. It also seems that the heat waves produced by means of electric light are more penetrating than those produced by the application of ordinary fomentations, hot water bags, and electric pads.

inability to flex the first finger, and even this movement of the index may be effected in some cases by extension of the wrist (Fig. 15).

Extension of the fingers. In musculospiral paralysis the patient is unable to extend the first phalanges. By supporting the primary phalanges, however, extension of the two distal segments of the fingers is easily accomplished by the interossei and lumbricales (Fig. 16). Extension of the two terminal phalanges of the fingers is not always abolished by paralysis of the interossei and lumbricales. In many cases of ulnar paralysis, the common extensors are capable of making complete extension of all the segments. Although the musculospiral nerve does not supply any of the intrinsic hand muscles, the function of all of these muscles is seriously impaired by paralysis of that nerve (Fig. 17). By its action through the extensors, the stability of points of leverage of these intrinsic muscles is made effective.

Lateral movements of the fingers. Lateral movements of the fingers are effected chiefly by the interossei, but substitution for both adduction and abduction of the fingers is found frequently in the action of the long flexors and common extensors of the fingers. The common extensors are capable of spreading the fingers in accurate imitation of the action of the interossei, while the contraction of the long flexors causes adduction of the fingers (Fig. 18). Great care is necessary in determining interossei action in the movements of adduction and abduction of the fingers. The fingers should be flexed at the metacarpophalangeal joints to eliminate the action of the long extensors. There is no sign by which ulnar paralysis can be positively determined by examination of the voluntary movements of the fingers. The ability to superimpose the extended little finger upon the palm of the ring finger is a simple and practical test of ulnar function in the majority of cases. In some injuries of the ulnar nerve the amount of disability is so slight that an estimate on an anatomic basis exaggerates the importance of the lesion. The refinements of finger motility are usually impaired by ulnar lesions.

LOWER EXTREMITIES

Interpretation of muscle function of the lower extremity is much simpler than that of the upper chiefly because of the minor importance of the intrinsic foot muscles as compared with those of the hand. Attention has been directed principally to the disturbance of the coarser muscles in the investigation of voluntary movement of the lower extremities (Fig. 19). Substitutions of movement are not frequent. Flexion of the leg and thigh is rarely abolished in sciatic paralysis because of the preservation of function of the semitendinosus. This branch leaves the trunk at a high level and usually escapes injury. No case of sciatic paralysis operated upon by me showed inability to flex the knee because of the nerve lesion.

Extension of the leg was rarely a matter of investigation in the series, because of infrequency of anterior crural paralysis. One such case, now under observation, shows substitution for the quadriceps action by the tensor fascia femoris supplied by the superior gluteal. Walking is characterized by hyperextension of the knee maintained in this position by the tensor fascia femoris, and the usual secondary hydrarthrosis is present. Supplementary movements of the ankle-joint are fairly frequent when the muscles of the first order are paralyzed. Inversion of the foot effected by the tibialis anticus supplied by the external popliteal may be simulated by the tibialis posticus unless the foot is held at right angles. Substitution for the loss of dorsiflexion of the foot was not observed. Plantar flexion normally accomplished by the calf muscles may be produced by the action of the perineus longus.

Movements of the toes are sometimes confusing when the contraction of the antagonists of the paralyzed muscles is followed by a rebound simulating the normal action of the muscles under investigation. If the dorsiflexors of the toes are paralyzed, and the patient attempts to contract the paralyzed muscles, plantar flexion of the toes may be the initial movement followed by a rebound of the toes to the original position. The rebound resembles slight dorsiflexion and may be deceptive.

tion has been done early. This corresponds with the work done by E. H. Nicholls, of Boston (12), who, writing in 1904, thought that the periosteum itself deposited new bone after this operation. There can be no doubt that new bone is generally of good quality, reproducing the shape and function of the bone which has been removed. This is particularly true before the ossification of the epiphyses. The bone-forming elements which remain attached to the periosteum are very active at this time of life. It would seem that in order to understand these results, one must believe that inflammation of the bone loosens the bone-forming elements from the periosteum.

Our observations have convinced me that it is never proper to remove the shaft of a bone during the acute stage of osteomyelitis before an involucrum has been formed, because the resulting arms and legs have been infinitely superior in all cases where there has been a late removal of the sequestra.

Based on the experience of handling many thousand cases of traumatic osteomyelitis during the great war, it would appear that when complete subperiosteal excision of a section of shaft is done within a few hours of inoculation, regeneration occurs with more difficulty and more often fails to occur than if the same operation is performed later. In traumatic osteomyelitis, excision of a section of shaft bone after inflammation has manifested itself by congestion and thickening of the periosteum, is hardly ever followed by failure of regeneration by the formation of subperiosteal callus. This is particularly true where the bone-scraping technique of Ollier has been followed as described by Leriche (13). When this technique has been skillfully employed, even before the periosteum is inflamed, regeneration almost invariably occurs. These facts argue that the scraping of the bony cortex and inflammation in the same region result in leaving bone-forming elements adherent to the periosteum.

This explanation of the question makes it clear that subperiosteal resections of bone in acute infectious osteomyelitis are not to be feared provided operation is never performed in this condition before the appearance of

inflammatory symptoms. This simple fact, i.e., that inflammation always preceded operation in this condition explains the regenerations which Nicholls so fortunately enjoyed but which he attributed to the periosteum itself.

The work of Nicholas Senn, on the other hand, based on the classical experiments of McEwen (14), gave remarkably favorable results. He did not favor the excision of the entire shaft at an early stage but advocated the operation providing radical drainage, leaving a shell of bone to be dealt with as indicated at a subsequent operation. Nicholls agrees with this idea when the disease is located in either the femur or the humerus, since these bones cannot be excised without considerable deformity and shortening resulting. In the case of one of the bones of the leg or forearm, its fellow serves to maintain the length and shape of the limb so that this element does not enter into the question so seriously as it does in the thigh and arm. Taking all things into consideration, it seems that the best treatment of the initial stage of the disease is immediate incision through the periosteum, thorough exposure of the medulla, leaving enough supporting cortex to prevent deformity and in such a shape as not to interfere with drainage and leaving a layer of bony scales adherent to the reflected periosteum, the disinfection of the exposed tissues with tincture of iodine, the packing of the cavity with iodoform gauze to be removed on the second or third day, and the provision of free dependent drainage.

This treatment should be instituted immediately on making the diagnosis. One must be careful to avoid the epiphyseal cartilages in doing the operation, since injury to this area results in a hindrance to further bone-growth from the injured end of the bone. When the infective process itself involves the epiphysis there is no other course to adopt, except that of thoroughly clearing away all diseased tissue, since if the surgeon be hindered by timidity, it is possible for the process to extend into the contiguous joint, when amputation may result. It is wise to mention the possibility of the subsequent shortening which one anticipates so that the

with the X-ray, very accurately as a rule. One point often overlooked is that sequestra do not show the osteoporosis of the surrounding bone but stand out in denser shadow¹; the progress of the demarcation from surrounding bone can be followed clearly if one keeps this in mind.

When one speaks of disinfection of these wounds one means disinfection by the Carrel-Dakin technique, accepted now, I think, by all who have *really* tried it, as *the* method. Certain substitute methods worth considering will be dealt with later in connection with osteomyelitis; they belong, however, to later stages and have no bearing on recently infected fractures and wounds.

One thing in which we cannot follow the war routine I think, is in the ultraradical handling: not only primary débridement, but the ultraviolet secondary laying open of wounds has sometimes seemed a fetish. There is no advantage in doing more than a wide open exposure; the conversion of a wound into a sort of platter with a slant section of most everything in the limb serves no purpose.

Again, wholesale removal of loose bone fragments may often and easily be overdone. There are many ex-service men still waiting with flail-limbs, with a long or short section missing from the bone, and nothing to replace or repair it with, often too scarred-up for clean grafting operations without grave risk of slough and sepsis. I have seen a good many myself, results partly of trauma, infection, and hard luck, but also of zeal not quite well directed. We can at least regulate the zeal if not the other factors.

Generally speaking, remove no bone early when there is infection, but insure wide-open drainage, disinfect, and wait for demarcation. Often I have seen what I thought a wholly dead fragment yield only a scale of sequestrum and then go on to do its part in repair.

Fixation is important in these cases partly for rest, more to give decent position for repair when repair begins in earnest.

There has been a bit of confusion about the use of the Army splints in fixation. In the

main they were meant to be used as transportation splints—a purpose for which they are admirable. Even the traction splints for the arm, which I loathe, are admirable for the transportation and even the early treatment of a humerus shattered by a shell wound and all of them are good for the work they were meant for.

But they do *not* solve the problem of fixation during treatment for ultimate repair. There can hardly be a worse way of ensuring non-union in a shattered humerus than keeping it under continuous traction, and this says nothing of the lamentable results on the shoulder muscles and joint.

Even the Thomas splint (now vaunted as a cure-all application just as if it were not older than most of us) excellent as it is, is of service, save for the emergency, only when rightly applied and most skillfully adjusted and attended. The Steinmann nail and the Blake tongs have a limited use only and only in skillful hands, and can do much harm.

In short the problem of external fixation is about where it was before the war so far as civil cases are concerned, and if we were to forget all but the aeroplane arm splint and the “cock-up” wrist splints there would be no serious loss.

We must treat each case to ensure for that case the most accurate adjustment and best contact of fragments we can, just as soon as our problem ceases to be one of sepsis only, and that should be a matter of days not weeks.

The question of direct fixation in the wound is still debated. I used it long before the war, still use it, still avoid it when I can, yet there is no objection to holding fragments against wide separation with a loop of suture or a perforated plate to which the bone ends are lashed, and this method has proved of service in my hands and does not interfere with sterilization. Plates of the Lane type do not belong in an infected wound; they are undesirable enough in a clean one.

The question that remains after all these matters of sepsis, etc., are over is one of union, and here we have much to learn. I have had little luck in healing infected compound fractures with small scars and the secondary suture operations rarely help much in this

¹This is also true of aseptic bone portions cut off from blood and nerve connections, rarely a source of confusion

value should be placed on this plan of treatment

The important point to be gained comes from the fact that this treatment directs the lymph stream away from the substance of the bone so that there can be no advancement of the pathologic process, while on the other hand all of the natural forces can proceed with the work of restoration

Whatever cannot be repaired by nature can be accomplished surgically later on at leisure when the patient has recovered from the acute condition and when the element of sepsis has been eliminated and the surgeon has to deal only with end-results of the disease

CHRONIC OSTEOMYELITIS

The experience of the war has been of great value in furnishing experience in the treatment of chronic osteomyelitis although conditions are not exactly parallel. The important lesson universally learned corresponds with the experience of the few civilian surgeons who had a large experience with chronic osteomyelitis before the war, namely (1) that in order to succeed one must remove absolutely all dead substance. In war surgery this means foreign substances in addition to sequestra which are alone to be considered in civil practice. (2) Provision must be made for filling the defect after all foreign bodies and dead bone has been removed and every portion of the remaining cavity has been thoroughly freed from infectious material

Methods of closing the defect My earliest experience with these cases was as an assistant of Moses Gunn in whose clinic we treated a great number of cases of chronic osteomyelitis

After removing all sequestra and producing a smooth cavity he tried to obtain healing from the bottom by keeping the external wound open by means of a paraffin plug.

This plan proved very satisfactory although somewhat tedious. I also had an opportunity of observing many cases treated in the clinic of Charles T. Parkes who was my surgical chief following the death of Professor Gunn. The same plan of treatment and the good results continued

For a number of years following this experience, I assisted Nicholas Senn in the treatment of many of these cases. After thoroughly removing all sequestra and infectious matter and smoothing the cavity in the bone, he chiseled away a sufficient portion of the involucrum to permit the edges of the wound to unite without the slightest tension.

Then the cavity was carefully disinfected with 5 per cent carbolic acid and thoroughly dried; then finely cut, decalcified bone chips, which had been preserved in 1:1000 corrosive sublimate solution, were dried and sprinkled with iodoform powder and carefully packed into the cavity in sufficient quantity to fill the cavity barely full. Then the edges of the wound were carefully sutured so that the coaptation was perfect. A very large dressing and immobilization splints completed the operation. The results were excellent. The reason why the method has not received more extensive adoption lies in the fact that few surgeons work with sufficient accuracy to carry out every detail of this procedure which is necessary in order to prevent the breaking down of the implanted graft. Moreover, the simpler method introduced by Max

results in a few cases but which we abandoned again because the results seemed no better than with Schede's method.

This method consists in the steps described in connection with Senn's method to the point of filling of the cavity, the technique then being as follows

The cavity is left empty and the wound is closed by means of a double row of continuous catgut sutures the first row acting as tension sutures and the second row as coaptation sutures. An Esmarch constricting bandage is left undisturbed until the very large dressing supported with a number of splints has been applied and the patient has been returned to his bed with the limb elevated in order to prevent the cavity to fill moderately with a blood clot which may remain undisturbed because of the character of the dressing until it has become thoroughly organized.

mixed pathology and surgery out of which there has emerged only one clear voice in late years—that of the prophets who preach the “ideal” operation. I suspect they are false prophets.

The “ideal” operation, so-called, is that of subperiosteal resection after the completion of necrosis and of sequestrum separation. This, an operation post mortem of valuable tissue, seems scarcely ideal.

It is only better than the patch work after many months of neglect in that it postulates only weeks of neglect.

If there is an “ideal” operation for osteomyelitis—if there is an ideal—then it must concern itself with the *abortive* treatment, with a treatment that renders the much advertised subperiosteal resection a superfluous *tour de force*.

We have very much misconceived the every day clinical pathology of osteomyelitis, and this is so largely because we have followed the book.

It is true that one meets at times the explosive type set forth in all good textbooks. The case of the boy of thirteen who disregards the advice of his wise if elderly aunt and goes swimming in the old swimming hole, comes back to supper, late, listless, sad, and feverish, and is presently diagnosed as typhoid fever or brain fever, or any fever next evening, and by the third day someone opens a bone abscess, and after that does various, complicated, and eventually bone-grafting things to the boy.

As I have seen things happen, this is rare. Most cases are more deliberate. There is at least a three-day interval between pain and fever and necrosis, and more often it is a week. One has ample time to get scared and back again before actual massive necrosis begins.

“tis is familiar,
review of the
recent years;
notes on

his type
hæmatogenous and it is as a rule, but there
are not a few cases (I have seen two since
summer) in which a local sepsis in the limb

has been followed by a true osteomyelitis of a bone higher up the limb without other foci and without direct invasion, possibly by lymphatic transfer, like that which gave us infected joints higher up the limb in the war wounds.

Also direct invasion of bone from the soft parts does occur, most often in infections of the hand.

Second, the book picture we were all brought up on, the above-noted small boy who gets chilled swimming, comes home and presently shows a desperate typhoid picture, semiconscious, etc., is perfectly true but misleading. We have all seen it, but far more often does one meet the case that goes on for a week before the patient shows obvious severe symptoms. These I find more common and often misunderstood, or overlooked because they do not fit the copy book account.

Third, by no means all cases show extensive sequestra even with the history of a severe onset. An extensive area may be involved with very little bone destruction, and this may happen even in the absence of anything more than the crudest surgery.

Fourth, the low grade local focus called a Brodie’s abscess may take care of itself, or rather the focus may and often does disappear rather than go on to a proper abscess.

Fifth, lacunæ in the X-ray may not mean foci of persisting infection but merely irregular repair. Here again the X-rays will illustrate.

Sixth, there may be extensive penetration from the original focus up along the marrow, but unless there be pressure also, the death of bone resulting may be but little. In one case, a focus, opened early near the knee, showing staphylococcus pus, called for operation a few days later to drain at the mid-third of the femur, and after weeks involved the hip-joint, without producing anything more than trifling scale sequestra in the shaft of the femur. This limitation is a matter of drainage.

Seventh, after the involucrum is formed, periosteal repair is not good; one gets at least as much from reasonably vascular cut surfaces of new bone as from the periphery, despite the recent allegations of Mayer, who forgets that foreign bodies depress bone.

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THE MOISTURE AND ASH OF MATERNAL AND FETAL BLOOD

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BY the comparison of maternal with foetal blood in regard to their ash and water content, the following studies aimed primarily to assist in solving the problem of the placental interchange. The specimens were obtained almost simultaneously at the conclusion of the expulsive stage of labor, one from a vein in the arm of the mother, the other from the umbilical cord. As the work progressed, it became evident that more extensive data were desirable pertaining to the various months of gestation and especially to the periods immediately preceding and following labor. Also, whenever an opportunity presented, we made analyses in cases of eclampsia and allied intoxications.

The analytical method adopted was very simple. The blood was introduced into a volumetric flask of known weight containing a definite quantity of sodium oxalate. Thus at the proper time correction was made for the material used to prevent clotting. Both the total solids and the ash were estimated by the gravimetric method, the moisture, in other words, the quantity of water in the blood, was determined by the usual calculation. After removal of the corpuscles, the plasma was analyzed for moisture and ash.

Basing their opinion upon the presence of a normal number of red corpuscles, Ehrlich and later observers stated that hydræmia did not regularly accompany pregnancy. This evidence of an indirect character has been re-

garded as less reliable than that Nasse obtained in 1877 by chemical analysis, and textbooks at present ordinarily assume the existence of an hydræmia during pregnancy. From the first to the eighth month of gestation, Nasse found that the specific gravity of the blood decreased, while its water content changes

water. In normal, non-pregnant women, we found values within these limits; and our results in four cases are given in Table I.

At different periods of normal pregnancy we made twenty-three analyses (Table II). The blood-moisture tends to rise during gestation; in seven instances the values exceed that accepted by Hammarsten as the upper normal limit. Whether or not these should be considered as cases of hydræmia is problematical for a precise line of demarcation between normal and pathological percentages of water in the blood must be fixed more or less arbitrarily. Of more importance than the question of terminology is the fact that an appreciable increase in the water content of the blood does occur during pregnancy.

Comparison of the values obtaining at the various months of gestation with each other and also with those of normal women is graphically presented in Chart I. After the

by lack of repair power. There is room for confusion between osteomyelitis and that type of tuberculosis with slow progress and unusual regenerative power met with at times in carpus and tarsus. In shaft processes in the first place tuberculosis is rare, the history is different, the clinical picture is different, the X-ray is different, yet a good many cases of sinuses leading to sequestra are still treated as tuberculous, particularly if about the hip. This should not and need not be.

TREATMENT

One has heard too much of the "ideal" operation if by that one means subperiosteal resection, an operation that should rarely be done.

First. Obviously the *ideal* operation is the relief by opening the focus of infection *before* there is bone damage, not always but often possible, wonderfully satisfactory when done early enough. In some such cases one needs only drainage and that for a short time only. In picked cases this is possible even after a week or more from onset of the disease.

Second. The next choice is the early operation while bone damage is but little—trephining, drainage, disinfection—a later cleaning out of small sequestra, and either a return to the Dakin disinfection or resort to the wax technique presently to be described.

Third. In case of a good deal of bone destruction one waits, after establishing good drainage and disinfection, until demarcation occurs. If but part of the shaft is gone, go in and remove sequestra as soon as they are separated. In such cases if an accessible wound is left to granulate, one need give nature no further help, as a rule, save for keeping the wound clean by continuing disinfection.

Fourth. If there be a total sequestrum, of whatever length, then wait until the periosteum begins to show a shadow line of new bone in the roentgenogram and do the subperiosteal operation carefully. At best one has the two triangle ends to fill in; at worst there may be defective periosteal repair at some point and almost a reproduction, a condition not infrequent, calling for repeated repair operations. This operation is not to

be compared to the early operation if one can choose. Whether the average result (even in apparently favorable cases) is better with this much vaunted technique than with a later operation after the involucrum is well under way I am not quite sure. The subperiosteal operation is prettier, perhaps no better.

Fifth. In cases first seen in a later stage as most of them are, one has an involucrum of some mass enclosing sequestra greater or less. Obviously the shell is to be opened early, while bone growth is still active, and before too many fistulae have developed. When it can be done one makes a trough and cleans out sequestra and "pyogenic membrane."

Then comes the question of closure, of filling up the trough. A fair-sized trough will often close up simply under Dakin irrigation, slowly but well. Even a large cavity can be handled with bone wax. Schede's blood clot is obsolete, for reasons. Filling with in-turned skin flaps is not at all bad, but often impractical for lack of slack. Turning in a muscle flap (Chutro et al) is a clumsy piece of work, and has not worked for me in the cases where it mattered. It is easy to do in cases that have only a pocket that would heal if left alone. Fat transplants are better, if they have a pedicle. Free fat I have had no luck with in osteomyelitis cavities, well as it takes in most places. Breaking in of the bony sides of the trough to lessen the cavity is ingenious, and sometimes works well. The ideal operation at this late stage, however, is to my mind the removal of the sides of the trough leaving the bottom only and such lateral periosteum (little enough) as may be separable. This I have done often on various bones. It works out prettily, it carries no danger save of fracture¹ (a risk calling for splint protection and bed care for a time), it minimizes the chance of pocketing. I have never done it in an adult case and perhaps it should not be done on very late cases with low repair power, but I have seen no case that refused to repair.

This is the ideal operation, late.

Sixth. In late cases with many, poorly draining fistulae a removal of sequestra, open

¹ I have had one such fracture in a femur case. Union was prompt, the result perfect.

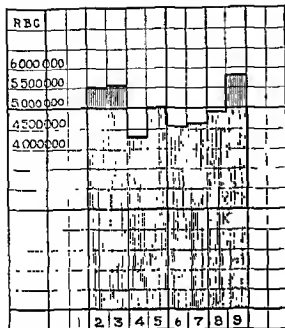


Chart 3. Red corpuscle count (Thompson). Vertical columns show month of pregnancy.

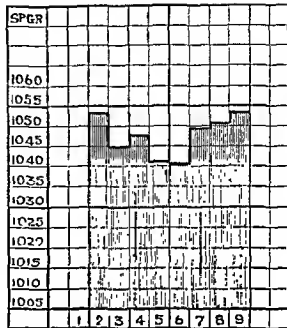


Chart 4. Specific gravity of whole blood (Thompson). Vertical columns show month of pregnancy.

The inorganic salts of the plasma (Table IV) we find generally to be in slightly higher concentration in the maternal circulation though occasionally the values for mother and foetus are identical. An excess of ash in the foetal plasma was found in a single instance, but there the foetus was stillborn and an atypical analysis was not unexpected. The results in normal cases accord perfectly with the hypothesis that the inorganic salts required for foetal growth pass the placenta by osmosis and this explanation, it would seem, may be confidently accepted except perhaps in the case of iron. From the study of stained microscopic sections of the placenta Hofbauer concluded that this organ actively participates in the transmission of haemoglobin to the foetus. At present we are not in a position to challenge his statement, but our results suggest the need for a special analytical study of the iron in the blood of mother and foetus before Hofbauer's views may be adopted.

The data regarding moisture obtained for the purpose of studying the placental interchange are not to be interpreted so readily as might be supposed, and it may prove helpful to review certain accepted physiological

facts before we discuss the analytical results recorded in the preceding table. The maternal organism, obviously, must provide the water required not only for foetal growth but also for the amniotic fluid. On the other hand, foetal waste products evidently are in solution as they pass through the placenta to enter the maternal circulation. Pertinent conditions, then, require that water may move readily from either of the two sides of the placenta to the opposite side.

The placental partition meets such requirements admirably, and it functions probably as a semipermeable membrane. This conclusion was announced by Kroenig and Fueth on the basis of their demonstration of a similar freezing point and consequently an isotonicity of maternal and foetal plasma. The same conclusion was reached by Slemmons, Sedgwick and Kingsbury, Campbell and Hunter, and Plass, who made a comparative study of various organic constituents of maternal and foetal blood, and also by Cohnstein and Zuntz from their work upon the placental interchange of oxygen and carbon dioxide.

In the case of the whole blood, our analyses demonstrate the presence of relatively more

carbolic, and waxed. Granulations are not easy to get really aseptic after all.

In the few cases in which sheer lack of repair power is the trouble we are rather stumped today. Bone grafts are often out of place because the wounds are septic, or if healed, then so liable to recurring sepsis; whole plastics are rarely useful unless one excepts the cross transplants of fibula for tibial defect. Fortunately these cases are rare in the spontaneous osteomyelitis cases unless one does the subperiosteal operation.

Whether we may some time feed the languid bone with bone or lime or magnesium to stimulate the jaded growth, time alone can tell. As I have already said I am an optimist for the moment at least, about this line of endeavor.

INFECTED JOINTS

Here too we are at the beginning of a new era. Only of late have we begun. It is only five years ago that I read a paper, perhaps a pioneer paper, on the radical early disinfection of infected joints, ignored at the time, reprinted in the *British Medical Journal* in 1917, as people began to get the point of view. Previous work in continuous disinfection of the closed joint, as in Krause's iodoform injection and Murphy's formalin-glycerin, and even the results of the ether lavage of the French surgeons, seem not to have brought out the point; namely the long resistance of joint structures to most infections.

The operations and the one accidental autopsy finding in one recently cleaned joint of my series emphasize the slowness of simple infection (when there is no tension) to penetrate below the surface layers.

In the septic joints associated with osteomyelitis, for instance, my cases reported show how readily the infection may be overcome as a rule. Our old experience shows the lamentable result of the usual form of drainage both as to deaths and as to ruined joints.

If there is damage to soft parts or bone associated with the joint infection, disinfection by irrigation with primary closure is not usually practical, but war experience has shown that there are two ways, disinfection with Dakin's leading up to secondary closure

or to healing by granulation and the Willems treatment of free incision with mobilization. In face of the results of these methods one can no longer say that a drained joint is a ruined joint, without making exceptions.

How good are the results of the mobilization treatment alone? I cannot say from my limited experience. It would seem that this method gives free drainage and a chance for the filling up of the joint rapidly with granulation masses. We have long known that there was no muscle spasm holding a *drained septic joint*. Now we know that if we encourage, as well as allow, motion, some sort of joint results, probably without a very definite joint cavity but with useful motion. Unfortunately the war cases, such as those in Metcalf's excellent paper on wounds of the knee, include only a few followed through. They do establish, however, the harmlessness of the procedure, the promotion of drainage, and apparently the lessened liability to pockets (as in the popliteal space) outside the joint and the possibility of good results. Part of this I can confirm—what I do not know is the chance of complications. I have had one case with secondary total necrosis of a previously intact patella under this treatment and one case in which the healing was so slow that adhesions were solid and a later *brisement forcé* necessary, though successful, after closure.

I am not yet clear just what sort of a joint results, though this does not matter.

Some eight years ago I drained an infected knee with the U incision laying the patella up on the thigh. The joint filled up with granulations, flush with the surface. A secondary operation showed smooth enough cartilage beneath granulations, so I prepared a fresh surface, disinfected, replaced the patella and sutured the tendon, drained for 24 hours, mobilized, and got a strong knee with 45 degrees of motion.

This is the same sort of thing, probably, that one gets by the Willems method, the same thing that I have recently so obtained in two cases and am hoping for in a third recent case.

What should be our routine today in infected joints?

TABLE IV — MOISTURE AND ASH OF MATERNAL AND FETAL BLOOD IN CASES OF NORMAL PREGNANCY

Case	Para	Whole Blood						Plasma				Remarks
		Hæmoglobin*		Moisture		Ash		Moisture		Ash		
		M per cent	F per cent	M per cent	F per cent	M per cent	F per cent	M per cent	F per cent	M per cent	F per cent	
34	I	42	85	82.3	75.7	0.65	0.8	02.9	02.2	0.6	0.6	Normal labor Fœtal head soft
35	II	71	93	80.2	79.2	0.8	0.95	02.0	02.0	0.9	0.8	Normal labor Fœtal head moderately hard
36	II	50	88	78.2	73.0							Normal labor Fœtal head moderately hard
37	II	59	87					02.2	02.7			Normal labor Fœtal head moderately hard
38	III	70	98	80.6	78.0	0.8	0.8	02.7	02.3	0.9	0.6	Normal labor Fœtal head moderately hard
39	V	78	105	79.0	75.9	0.9	0.75	02.6	02.1	0.9	0.7	Forceps Ether anesthesia Fœtal head hard
40	I	59	85	82.7	77.7	0.9	0.9	02.9	02.6	0.9	0.6	Forceps Ether anesthesia Fœtal head soft
41	I	64	97					02.6	03.0			Forceps Chloroform anesthesia Fœtal head hard
42	I	56	95	81.0	77.2	0.71	0.65	02.5	02.0	0.5	0.60	Forceps Ether anesthesia Stillbirth Fœtal head hard

*Hemoglobin estimations were made with the Dacie instrument. The results serve to show the disproportion in the hemoglobin of the bloods but the method does not yield absolutely accurate, quantitative determinations.

TABLE V — MOISTURE AND ASH OF MATERNAL AND FETAL BLOOD IN CASES OF TOXÆMIA PRE-ECLAMPTIC TOXÆMIA

Case	Para	Hemoglobin		Whole Blood				Plasma				Remarks
				Moisture		Ash		Moisture		Ash		
		M per cent	F per cent	M per cent	F per cent	M per cent	F per cent	M per cent	F per cent	M per cent	F per cent	
43	I	67	95	81.3	78.8	0.8	1.2	01.0	02.9	0.55	0.5	Marked edema Albuminuria 0.2 per cent Blood pressure 200 mm hg
44	I	78	100	77.9	79.7							Moderate edema Albuminuria 0.3 per cent Blood pressure 195 mm hg
45	I			82.6 82.4		0.75 0.9		01.8 01.7		0.8 0.95		Onset of labor Slight edema After delivery
46	VIII			79.3 78.8		0.8 0.9		01.8 01.6		0.9 0.9		Onset of labor Slight edema After delivery
47	VI			82.9 81.8		1.0 0.9		02.0 02.0		1.2 0.8		24 hours antepartum Moderate edema After delivery

ECLAMPSIA

48	VIII	68	103	81.5 87.8 4 87.8 6	75.4 75.6	0.7	1.0 7 1.0 75	02.2 02.4 02.3	02.4 02.3	0.85 0.85	1.0 8 1.0 6	Marked edema Albuminuria 0.15 per cent Blood pressure 185 mm hg Twin
49	IV	51	96	80.0 80.7	78.2	0.75 0.8	0.9	02.7 02.2	02.6	0.9 1.2	0.6	1 hours antepartum After delivery Slight edema
50	II	69		81.2 82.5	78.5	0.97 1.02	1.21	02.4 03.2		1.2		9 hours antepartum Moderate edema After delivery
51	I	57		80.0 82.3				02.0 03.1				10 hours antepartum After delivery Marked edema
52	III			81.6 83.7		0.8 0.8		02.2 02.2		0.9 0.7		Onset of labor Marked edema After delivery

NEPHROTIC TOXÆMIA

53	VI	38		81.4		1.2						Marked edema Albuminuria 0.15 per cent Blood pressure 215 mm hg No convulsion Stillbirth
54	II	82		77.0	81.9							Slight edema Albuminuria 0.1 per cent Blood pressure 124 mm hg No convulsion Stillbirth
55	III	50	109	79.2 79.5	75.6			90.0 92.6	92.4			11 days antepartum No convulsion After delivery Slight edema
56	V			79.7		1.0		02.5		1.1		Moderate edema No convulsion
57	III			79.5 80.3		0.7		02.1 02.3		1.0		10 days antepartum Slight edema After delivery No convulsion

CLINICAL CONSIDERATION OF OSTEOMYELITIS¹

BY A. J. OCHSNER, M.D., LL.D., F.A.C.S., AND D. W. CRILE, B.S., M.D., CHICAGO

IT has seemed worth while to consider osteomyelitis from the standpoint of the clinician because circumstances have favored us with an opportunity of observing an unusually large number of cases suffering from this affliction.

My observations began 34 years ago when I served as assistant to Professor Moses Gunn who treated a very large number of these cases. Following his death, I served as chief assistant to Prof. Charles T. Parkes for a period of 3 years, and after his death as chief assistant to Professor Nicholas Senn for a period of 4 years. Each of these surgeons had a great number of cases of osteomyelitis, hence my special interest in this subject.

In my own practice at the Augustana Hospital during the 20 years from January 1, 1899, to January 1, 1919, I have treated 301 cases of osteomyelitis, so that the following views are based upon the treatment and observation of a sufficiently large number of cases to be worthy of consideration. My assistant, D. W. Crile, served in France and England for a period of 3 years during the recent war where he had an opportunity of observing several thousands of cases of osteomyelitis due to gunshot and shell wounds and he likewise is interested in the subject.

Osteomyelitis is a disease, inflammatory in nature, involving bone and having its origin practically always in the medullary tissue, although at times it may originate beneath the periosteum (1), and also as Lejars (5) says: "Frequently, there are two foci; one, subperiosteal, and one, in the medulla."

Osteomyelitis may be subdivided into the acute infective type, the subacute infective (occurring during the separation of sequestra and including rarifying and condensing processes in the bone), and chronic osteomyelitis in which the infecting organism determines a further subdivision into pyogenic, tuberculous, or syphilitic.

As a matter of fact the division of infective osteomyelitis into an acute, subacute, and

chronic stage, is purely arbitrary, and often can be accomplished only with the greatest difficulty, since the disease is a progressive one. However, as a general rule, the acute stage may be said to occupy the period when a general systemic reaction exists characterized by fever, toxæmia, an increased pulse-rate, intensive pain, always located near the affected part and generally being diffuse over the entire neighborhood. The subacute stage may be said to begin when the toxæmia has been overcome and suppuration still exists. The chronic stage constitutes that period in which the bone cavities exist.

It is possible for the acute stage to be absent, clinically, so that when first discovered the disease may be subacute or it is possible for both the acute and subacute stages to be negative clinically so that when first discovered, the chronic stage exists. This, however, is due to the fact that the early stages were looked upon as rheumatism, growing pains, or neuritis.

Clinically, the tuberculous and syphilitic forms should occupy a separate classification. They are chronic, although each may be subdivided into an early and a late stage of the disease. Their course, pathology, and treatment are quite different from that of the pyogenic forms so that they will not be considered at this time.

ANATOMY

The disease depends for its location and characteristics upon the fact that bone is a rigid and peculiar structure composed of a hard, sparsely vascularized cortex and a soft highly vascular core (the medulla), and a circumferential vascular covering, the periosteum.

All bones contain these three structures. However, they are present in varying proportions. The long bones such as the femur, tibia, fibula, humerus, and the bones of the forearm contain the greatest proportion of hard tissue and in these the medulla is a true core.

¹Read before the Chicago Surgical Society, February 6, 1920. (For discussion see p. 305.)

8 The moisture of whole blood is appreciably higher in the mother than in the foetus

9 The plasma moistures approach each other closely though by the method employed a difference of 1 per cent in favor of the foetus is found constantly Some unrecognized factor, physical or chemical, maintains osmotic equilibrium between the two circulations, and water passes the placental partition equally well in either direction

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AMNIOTIC HERNIA*

By EMANUEL FRIEND, M.D., F.A.C.S., CHICAGO

AMNIOTIC hernia so rarely occurs, once in about 6,000 cases, that brief discussion of the embryology and division or classification of the hernia in the region of the umbilicus will not be out of place

EMBRYOLOGY OF THE AMNION

The embryology of the amnion is important in that it helps us to understand the formation of the umbilical cord in which it plays an important rôle and occasionally of the umbilical region itself

The amnion is formed early by a split in the epiblast of the germinal area, and according to Cullen consists of a small flaccid sac, covering only the posterior surface of the embryo. This fills with fluid and rapidly outgrows the yoke sac, so that in a short time it has entirely surrounded the embryo, which measures about 2.5 millimeters in length, except where the yoke sac and body stalk enter the ventral surface. The amnion continues to grow so that the yoke sac is pushed away from the embryo, and a resulting progressive

constriction at the site of the yoke sac and body stalk forms the vitelline duct, which connects with the digestive tract, and there we have the formation of the umbilical cord. The amnion finally reflects itself on the cord to the umbilicus. About the tenth week the embryo is about 5 millimeters long and contains the differentiating gut in the cord; the gut begins to recede, which allows a perfect closure of the visceral plates, thus forming the umbilicus.

However, in rare instances, as we shall see, when the skin at the umbilicus is lacking, or fails to develop for some reason, the amnion covers the defect and it is known as an *amniotic umbilicus*, which allows the formation of *amniotic hernia*.

CLASSIFICATION OF UMBILICAL HERNIAE

Umbilical hernia may be classified as:

1. Congenital hernia of cord,
2. Amniotic hernia,
3. Infantile umbilical hernia,
4. Adult umbilical hernia.

* Presented before the Chicago Society, February 6, 1910

the nutrient artery). The blood supply of the bone comes also from nutrient arteries which generally enter the medullary cavity by a hole running obliquely through the compact cortex, and in the long bones the artery generally enters near the middle of the shaft. There are generally a few nutrient arteries entering the bones near their ends, but for the large part the foramina which one sees near the end of bones are for the emission of veins. There are two main nutrient arteries for the femur.

The course of blood through a bone. Arterial blood enters a bone through two routes, the most evident route being via a nutrient artery which after it reaches the medulla, sends blood both up and down the bone, rapidly dividing into an arborization, the branches of which are short, emptying quickly into comparatively large venous spaces. The other route of arterial blood is via the periosteal vessels, the arborization having already occurred in the periosteum—when following this route the arteries are lost track of almost immediately and capillary vessels conduct the blood through the haversian canals in which it may be said to become venous at once. It seems that this periosteal blood penetrates a very little distance into the bone, compared to the distance that the medullary prenutrient supply does. One can readily see how this comes about when one remembers that the haversian canals have their smallest diameter near the circumference of the bone. The blood issuing from the cut surface of live bone always exhibits the characteristics of venous flow, except when the nutrient artery itself is cut. For these reasons arterial blood, on entering the proper bony circulatory system, loses much of its impulse and becomes static. One may compare the entrance of blood into a bone with that of the entrance of a stream of water into a tank.

Foci of infection. Therefore, any organisms contained in the blood and brought by the blood to a bone, find their first opportunity to rest at the point where they enter the interosseous circulation. This point may be either directly beneath the periosteum or in the medulla at the point where the branches of the nutrient artery enter a blood-space. With the stasis

of the blood, the bacteria settle and begin to multiply, undisturbed by a blood current. In this way bacteria which are not virile enough singly or two or three together to make a home for themselves in a more active tissue, are enabled to begin an infective process in the bone. Having multiplied to sufficient numbers, they excite a little inflammation in the delicate cells lining the blood space. These cells swell and leucocytes and fibrin accumulate, shutting off this blood space from the remainder of the circulatory system. This can occur easily because bone encloses the blood space in all directions except its entrance and exit, so that swelling must occur only toward the cavity of the space and cannot occur circumferentially. From this little focus toxins and young bacteria disseminate, reproducing and extending this same process. We know that this is true from clinical experience, because the primary focus in acute osteomyelitis is practically always in the shaft and corresponds with the arborization of the nutrient artery as a general rule, occurring most frequently at the places where stasis is greatest, e.g., on the diaphyseal side of the epiphyseal lines and at the cortex of the bone. At both these places the blood-vessels are narrow, and the blood current very sluggish.

It is true that in many cases there seems to be a simultaneous involvement of the subperiosteal region and the medulla but while this is possible it seems most likely that the process begins in one or other of these locations and rapidly extends through the communicating blood spaces from the medulla to the subperiosteal region, or vice versa. Lejars has noted the frequency of this occurrence and advises that whenever an accumulation of pus is found beneath the periosteum, it should be opened widely, even though no other indication exists—for a medullary abscess is undoubtedly present.

BACTERIOLOGY

Almost any organism may be found in osteomyelitis. By far the large majority of cases are due to the presence of the pyogenic cocci (6), and the staphylococcus is the organism most frequently found. Streptococcus

of skin, muscle, and peritoneum, was retracted. The child was 1 day old when seen by the Doctor, but seemed to be unaffected by the physical defect. But the thin abdominal covering began to dry and with the increased intra-abdominal pressure produced a marked hernia. Dr Sanderson felt that the time for repairing this defect was past, but as a last resort advised operation. After resecting half of the liver, the muscles and skin were brought together. The child withstood the operation fairly well but finally died.

In 1913, H. Wellington Yates, of Detroit, reported a case of an 8 months old child weighing about 6 pounds and 13 5 inches in length which had a large hernial protrusion measuring 14 centimeters broad and 17 centimeters long. The child was otherwise normal. No autopsy was obtainable, but according to Yates, the walls of the hernial protrusion were almost transparent. The protrusion consisted of amnion and peritoneum at the base of the skin, and was continued for a short distance upon the sac, the larger part of the intestine being in the sac. He also cites several other cases from the literature in his reprint.

Bonney, in 1914, in the *Proceedings of the Royal Society of Medicine* presented a specimen which consisted of the umbilical cord on which about 1 inch from the umbilicus was situated a cystic swelling rather larger than a cricket ball. The cyst contained the major portion of the child's intestine attached to its inner surface by a short mesentery, and it communicated with the peritoneal cavity by a narrow neck traversing the short length of the cord that intervened between the cyst and the umbilicus. The practitioner attending the labor had ligated and divided the cord between the cyst and the umbilicus, not realizing that the cyst contained the intestine. Bonney saw the case 24 hours later and attempted operation to save the child's life. Postmortem examination showed that nearly all of the intestine had been removed with the hernial sac. The specimen was shown for its clinical interest. He said that almost every hernia into the cord projects directly from the umbilicus, and the intestine in it can be seen through the wall formed of the thinned-out cord. In the much rarer form now recorded a

short length of the normal cord intervened between the sac and the umbilicus.

The literature on the whole was very brief on the subject; in fact Williams fails to mention it entirely and De Lee says: "Hernia into the cord are not so very rare. This must always be thought of while tying the cord and if operable should be closed immediately to avoid peritonitis."

On November 30, 1919, I was asked by Dr. Irving Stein, associate in the obstetrical department of Michael Reese Hospital (service of Dr. Frankenthal), to see a baby born the day before at 2:30 p.m., which presented a

Mrs. E. K., age 24, nationality, Jewish; occupation, housewife, residence, 812 Paulina Street; date of admission, November 29, 1919, at 11:45 a.m.; II-gravida, diseases, none. Menstruation began at age of 15, 4 days' duration, moderate amount, no pains. The first pregnancy resulted in miscarriage at three months, previous labors and childbirths

apparently well with the exception of undescended testes and a large hernial mass which occupied the entire abdomen projecting from the same. The mass was covered with peritoneum and amnion. The amnion seemed to be reflected on to the mass and contained a considerable amount of a straw-

External examination. The autopsy was done 8 hours after death. The body was that of a white

of the sac. The hernia extends from the ensiform region to a slight distance below the umbilicus. The stump of the umbilical cord is given off from the lower portion of the sac, at a distance of 2 centimeters from the lower margin of the latter. In an area 6

become involved further growth of bone from the epiphysis may be arrested particularly, if actual separation has occurred.

As a general rule the disease is limited to the diaphysis, the epiphyseal cartilage acting as a block against extension of the process into the joints. And also the close adherence of the periosteum at the epiphyseal lines checks the extension of subperiosteal supuration toward the joints. This in counter-distinction to the characteristics of tuberculosis. However, the joints proximal to the acute infection commonly show distention, the distending fluid being a protective outpouring of lymph into the synovia, and the fluid in these joints is very seldom infected. At times this fluid may even show traces of blood and the synovia are œdematous and hyperæmic.

Sequestration. After frank pus has appeared in the medulla, one hardly expects to prevent the necrosis which generally follows osteomyelitis. The inflammatory pressure which develops simultaneously with pus in the bones causes a shutting off of the blood and nourishing lymph to certain parts of the involved bone. Thus these parts die and after varying lengths of time are separated from the living parts. The separation of the delicate medullary bone occurs more quickly than does cortical sequestration. Thus medullary sequestra may be loosened after 2 weeks while the cortical sequestra generally take from 4 to 8 weeks in separating. The separation seems to be accomplished through the activity of certain marrow cells termed osteoclasts whose function it is to destroy all unnecessary bone. However, it seems that the presence of pus itself has some solvent action upon dead bone and this action is demonstrated by the gradual disappearance of small sequestra which are constantly bathed in pus. This solution of sequestra is a long and slow process which may be aided by chemical stimulation but surgical removal of sequestra after separation is our practice.

Character of pus. As the acuteness of the process decreases, the character of the pus changes gradually, until in the subacute and chronic stages the pus becomes a thin, serous

fluid lacking the milky rich appearance of the pus found in the acute condition. The very initiation of the process, however, is generally accompanied by a very thin, almost clear exudate, and this is particularly true when the offending organism is the streptococcus.

Repair. Reparative processes begin simultaneously with the formation of sequestra which may be single, multiple or the entire shaft may become a sequestrum. Inflammation stimulates the bone-producing mechanism, and it is not long until new bone begins to appear beneath the periosteum. It seems that this does not come from the periosteum itself but from bone element left clinging to the periosteum and nourished by the vessels of the periosteum. After 3 or 4 weeks, the periosteum begins to have a brittle feel much like the crackling of delicate tissue paper, and gradually the layer of new bone nourished by the periosteum assumes a definite thickness and gradually loses its property of being molded until after 8 or 10 weeks a definite shell of new bone surrounds the old dead bone. This new involucrum is poor in quality. It is honeycombed with spaces through which pus escapes from the neighborhood of the enclosed sequestrum or sequestra. There may be only one small hole through the involucrum but where multiple sequestra are contained, many cloaca are found and often the new shell of bone is so fenestrated as to resemble a very imperfect lattice work.

The new involucrum may be very imperfect in its reproduction of the original bone. Particularly is this the case when entire portions of the shaft have been destroyed and the limb has not been kept in its normal shape by orthopedic appliances. This most often occurs in the upper arm and thigh since in these parts there is only a single bone. In the leg and forearm where a second bone generally retains its shape, deformity does not so readily occur.

New bone is also formed from the medullary region, but this bone is not so important pathologically since from its position it cannot surround dead fragments, and therefore is more homogenous and of better quality than is the subperiosteal bone.

Hernial sac In sections which include the junction of the abdominal skin with the thin portion of the wall of the sac, the skin is covered by normal epidermis. The underlying stroma is oedematous. As the thin portion of the wall is approached, the epidermis becomes thinner, although still present and still covered by a horny layer, but papillae are absent. The portion of the wall covered by thin epidermis goes over into the membranous portion of

by a single layer of cells which are of about the same height as those on the free surface, but which are considerably broader. Their nuclei are large, oval, and vesicular. Some of these cells are considerably swollen, then their shape and arrangement are more irregular. Where this layer of cells is absent the

infiltrated by polynuclear leucocytes, many of which are fragmented. The connective-tissue bundles between the areas of infiltration are oedematous and have lost most of their nuclei. On the inner surface of the sac, peritoneal membrane is not recognizable, although there are a few areas covered by a thin layer of degenerated cells which are suggestive of peritoneal endothelium. In a section which includes the cord and part of the sac wall, the cord is flattened and somewhat ovoid in shape. It contains two large blood-vessels, an artery, and a vein. The cord and a thin layer of sac tissue to which the former is attached are separated from the rest of the wall by a cleft-like space, which is part of the lower margin of the fluid-filled, bleb-like area present in this region and noted in the gross. In this space are several hyaline, granular, eosin-stained, round, oval and elongated bodies whose nature can not be definitely ascertained. They contain a few shrunken, elongated nuclei. Their size and shape corresponds

cuboidal cells like those present on the under

by leucocytes than the upper wall. Upon the under surface of the lower wall, i.e., the inner surface of the hernial sac, there are a few groups of flattened cells which have oval or elongated nuclei. These cells are arranged in a single layer. Loosely attached to the greater part of the surface is a layer of tissue which is thin but which varies in thickness. It contains many of the flattened cells which in places cover the inner surface of the sac. In addition there are also young, spindle, connective-tissue cells, together with lymphocytes and leucocytes. In one

This disappears at each side before the area of attachment to the sac wall is reached. The tissue of the cord appears degenerated, and that of the sac wall beneath the cord shows the same polynuclear infiltration present elsewhere in the wall. In a section from another portion of the margin of the bleb-like area of the sac wall, the conditions are as follows:

the surface is covered by a single layered, very regular cuboidal epithelium, the nuclei of whose cells are small and condensed. In one place the cells of the covering epithelium are more flattened, their cytoplasm is hyaline, and their nuclei are elongated and pyknotic. Beneath the epithelium the superficial covering layer of the bleb-like area is formed of oedematous and degenerated connective tissue, throughout which polynuclear leucocytes are scattered in considerable numbers. The lower surface of the covering layer is free of epithelium in most of its extent, but here and there are small areas covered

oneal membrane

DISCUSSION

The point of greatest interest in this case centers in the possible relationship of the amnion to the hernia. If we accept, as we must, the belief that the amnion ceases normally at the placental insertion of the cord, it is necessary first of all to establish that amniotic tissue is present in the hernia, since any attachment of the amnion to the body surface of the foetus is an abnormality. That any amniotic tissue is present in the hernial sac is difficult of absolute proof through the microscopic examinations made because of the degenerative and inflammatory changes which are present. That the body epidermis is not continued over the surface of the sac is evident from both the gross and the microscopic examination. Except at the periphery, where the skin is continued up on to the sac for a short dis-

single layered cuboidal type and has the appearance of amniotic epithelium rather than of body surface epithelium. The cleft-like space is lined by similar

The temperature rises acutely to very high levels 103° to 105° , and is of a continuous type with little variation between morning and evening. The patient is generally unable to sleep. The pain is not definitely localized but involves the entire limb. The pain becomes worse on lowering the limb, as one would expect since in this position congestion is increased and, therefore, pressure on the nerves is increased.

When the bone is involved subcutaneous tapping on it at a distance from the focus will cause pain at the involved area. In case of an abscess or before an abscess is formed, induration may be found over the site, particularly when the subperiosteal focus is present.

In the less acute types the pain is of a constant character, described as an aching, located in the bone, and resembling the so-called growing pains. These cases occasionally show a slight febrile reaction, present one day and absent for an interval. Sometimes the patient will refuse to use the limb as after use, the pain increases. The subacute type may or may not be painful. There is generally an occasional spell of fever with malaise in the part. This spell may be precipitated by changes in the weather or overexertion. The surface of the bone may show nodules and irregularities.

The character of the pain is often discovered as chronic rheumatism. It is this type that includes the circumscribed bone abscess and bone-cysts. The chronic stage of the acute disease is almost always made evident by the presence of a discharging sinus.

DIAGNOSIS

Acute infective osteomyelitis must be differentiated from acute rheumatic fever which can usually be accomplished by noting that the affection is extra-articular. When contiguous joints are swollen secondarily, however, the differentiation is not easy. When this condition exists, tapping over the bone at a point farthest from the joint, may cause pain in the bone, while in an acute rheumatic joint, such tapping may be pain-

less *unless the joint be moved*. The presence of a single synovitis argues against acute rheumatism. One finds too that the skin overlying the joints is less red and oedematous when the synovitis is secondary to osteomyelitis. The general prostration, while it may be great in both the diseases, is often greater in osteomyelitis. Sometimes the joint contiguous to the osteomyelitic bone can be moved painlessly, but this is rare; one must always differentiate between acute osteomyelitis and an early stage of infantile paralysis. At times this is very difficult. The presence or absence of stiffness of the neck is very important in this differentiation, and whenever two limbs are involved, one can safely rule out osteomyelitis, as the disease rarely begins with a double focus except as evidence of a general pyæmia. The acute arthritis of infants generally occurs in the hips and knees and is most often found in nursing babes and may be associated with a gonorrhæal ophthalmia or vaginitis (8). In very young children one must always bear in mind the possibility of the presence of scurvy, which can be readily recognized because it affects many joints.

Acute arthritis deformans, especially when occurring in children, may be very difficult to differentiate. Generally the arthritis is multiple, however, the prostration not nearly so sudden, the temperature not nearly so high, and the joints less tense. All these conditions, however, can be excluded by the exact localization of the process outside the joint, and generally on the diaphyseal side of the epiphysis. The condition should not be overlooked in its earliest state when it is usually considered a strain or sprain or contusion, since a history of trauma is frequent.

The X-ray is of little or no value in the diagnosis of the early acute stage except in a negative way, since it may confirm the presence of periosteitis, tuberculous or syphilitic disease, or fractures; when medullary abscess formation has occurred, an excellent X-ray plate may demonstrate the condition but the diagnosis should be confirmed by one who is thoroughly familiar with the shadows seen in this condition, since they are often very faint and ill defined. The

DEPARTMENT OF TECHNIQUE

THE MANAGEMENT OF FRACTURES OF THE FEMUR¹

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BY common consent war fractures of the femur were the most difficult to manage, the most likely to cause fatalities, the most productive of deformity. In the early years of the war, Sir Robert Jones was authority for the

The grossly compound comminuted infected types of fracture of military service are very rarely encountered in ordinary practice, and for that reason alone many of the appliances of great service in the war are not needed in peace time. The great essential in the treatment of war fractures was a splint that could be used with safety, ease, and comfort during transport, a splint likewise that would permit access to the wound during subsequent treatment. An appliance of this sort is provided by the Thomas splint, the employment of which became routine in the British, French, and our own army and unquestionably did much to lower mortality.

The treatment of fractures of the largest bone in the body imposes upon the surgeon in civil life the largest responsibility, demands the maximum of initial and subsequent care, indeed, fracture of the femur is the high mark in major surgery in the field of fractures, a field in which deformity and disability are supposed to be inevitable.

Practically speaking we can classify fractures of the femur as they occur at the articular ends and in the shaft, thus giving us three zones of incidence.

The first, or upper third zone, may be said to consist of (1) fractures of the head or neck—capital and cervical cleavage, (2) fractures near the trochanters—juxtatrochanteric cleavage.

The second or middle third zone consists of all fractures of the shaft between zones 1 and 3.

The third or lower zone consists of (1) fractures above the condyles—supracondylar cleavage; (2) fractures of the condyles—condylar cleavage.

The epiphyseal groups are in the upper and lower zones and correspond respectively to the cervical and supracondylar varieties.

Irrespective of this zonal distribution there are certain important, almost fundamental considerations determining our procedure. The first of these principles is the recognition that a fracture is a lacerated wound of bone and periosteum and that there are always associated lesions of contiguous joints in the form of synovitis, arthritis and tenosynovitis, together with lesions of the overlying muscles, and of the vascular and neural vessels. Our problem then is not merely directed to the primary bone lesion, but is quite as much directed to this associated important pathology. We recognize also that the deformation following bony cleavage is due to disturbance of muscular compensation and that we "set" the bone only by "setting" the muscles.

fractures and either may be simple or compound.

Group I comprise those in which there is displacement of fragments, the displaced or malaligned group.

Group II comprise those in which there is little or no displacement of fragments, the non-displaced or aligned group.

In Group I we have the immediate problem of reduction and retention, in Group II our immediate problem is one of retention only.

We recognize also that early reduction means easier and more accurate reduction, and with this in view, preliminary traction is a great aid irrespective of the treatment imposed later.

We recognize that a lacerated bone like any other laceration heals by primary union when the edges are well coapted, thus leading to a minimum of callus, but that non-coaptation means secondary union and maximum of callus.

We recognize that we can convert a compound into a simple fracture by mechanical sterilization

¹Read at the Surgical Section, New York Academy of Medicine February 6 1920

OPERATION

The patient is anesthetized, the limb is cleaned and painted with tincture of iodine. The incision is made down to the periosteum avoiding the arterial regions and the nerve-trunks and placing the incision so that it will drain in a dependent fashion without pocketing. The periosteum is freely incised in a longitudinal direction, and if it is not already separated from the bone by the presence of a subperiosteal abscess, it is raised by scraping it from the bone by a sharp rugine such as Ollier devised. The blunt periosteal elevator should not be used nor should the periosteum be stripped roughly from the bone. A sharp, thin bladed chisel serves the purpose admirably, handled with great accuracy and gentleness.

Rough treatment would result in leaving the osteogenetic elements on the bone and would leave the periosteum impotent to produce new bone. A hole is now made through the cortex with a trephine or a drill or by chisel and mallet, great care being taken to avoid undue jarring of the bone before the operation is begun or during the operation. It may be necessary to make several holes through the cortex although this is rarely necessary if the point of greatest tenderness is carefully located. In the very early stages one may find no frank pus whatever but the marrow will be oily, serous and oedematous-looking. When this condition or the presence of pus is discovered, a large slab of cortex should be removed, leaving the remaining bone in the shape of a trough. One should chisel sufficient cortex away in both directions from the focus that he may be sure that no secondary focus remains undrained.

The further advantage of this procedure is that any incipient focus, too early to be detected grossly, will be nipped in the bud and will not progress to a destructive stage. The marrow or the exposed area should be removed with a curette and the walls of the cavity remaining may be washed with an antiseptic solution. For this purpose carbolic acid (5 per cent) seems very efficacious. In virulent infections, pure carbolic acid may be used, applied on a cotton swab and allowed to remain from 2 to 5 minutes. After this

time it should be diluted with alcohol and the cavity thoroughly washed out with alcohol (95 per cent). In place of using carbolic acid, alcohol alone may be used or ether may be used and of late Dakin's solution has come into favor for this purpose. Tincture of iodine is excellent. The use of various antiseptic pastes does not seem so successful in the treatment of the acute stage, although the bismuth, iodine, paraffin paste seems to have a favorable effect. The cavity may be packed with iodoform gauze or plain gauze to prevent the accumulation of a blood clot after operation. The presence of clots during the acute stage is dangerous and may lead to continued suppuration. The use of Carrel's treatment seems to give good results. Stewart and McCurdy declare that $3\frac{1}{2}$ per cent iodine is the best antiseptic and that packing interferes with the formation of a blood clot, in this way interfering with bone repair. It is most likely that the cases in which a blood clot is desirable, are not at all the type of case that we are considering since the presence of blood clot in this class of cases almost invariably leads to further septic developments. The wound is left open.

Rosenberg says that streptococcus and pneumococcus epiphyseal suppuration often heals spontaneously and that the treatment in nursing infants should be limited to the opening of abscesses (10). He may, however, have confused the acute arthritis found in infancy with an acute osteomyelitis. One should hesitate in making a diagnosis of osteomyelitis in suckling infants for this reason. In my own cases of osteomyelitis in infants the results have been amazingly good following simple incision.

It seems that Lejars and Robert LeConte (11) agree that it is never expedient to incise the periosteum only but that in all cases of periosteitis in the adolescent, it is wise to expose the medulla. If no medullary pus is found little harm has been accomplished while if a medullary focus has been neglected great harm may ensue. My experience has borne out this plan except in the very violent cases described above. (A. J. O.) LeConte favors the early removal of all bone and marrow involved and says that regeneration will occur if opera-

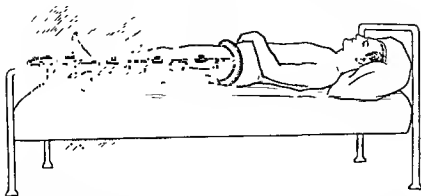


Fig 2 Thomas splint in fracture of the thigh or leg Note adhesive traction straps fastened to lower end

2 Traction and suspension methods in which there are applied to the limb straps to which weights are attached so that alignment is gradually attained,

3 Traction in the Thomas splint,

4 Mechanical traction methods as by the very efficient Hawley table

Operative or internal reductive methods consist of—

1 Skeletal traction by which traction is obtained by transfixing the bone (the Codivilla-Steinmann method), or by tongs or calipers attached to the outside of the bone (the Ransohoff method), or by passing a metal band over the bone (the Finochietto method),

2 Internal adjustment by direct exposure and alignment of the fragments with or without fixation by absorbable material such as kangaroo tendon or bone, or non-absorbable material such as wire, nails, screws, clamps, bands or plates.

The choice of the method of treatment depends upon (1) the physique of the patient, (2) the site, extent, and duration of the fracture, (3) the surroundings of the patient (home or hospital), (4) the experience of the surgeon

In the aged, the infirm or diseased, our treatment will be directed more to the general than to the local condition and we will not impose any added burden by our apparatus or forced restraint. Recently in a fracture of the neck of the femur in a diabetic, a fatality was doubtless hastened because I administered an anæsthetic for the application of a plaster spica. We must not forget that true fracture of the neck of the femur may occur at any age and that it is an incident of decades more than decadence.

The second factor, relating to the fracture itself, is very strongly linked to the remaining factors as to the place in which the patient is to be treated and the surgeon's own experience. It is, of course, advisable that fractures of the main bones should be regarded as a hospital problem; but we must realize that a great many patients for a variety of reasons demand home treatment, and this is especially true in fracture of the neck of the femur. Further than this, at present the interne and nursing staff in very few hospitals are sufficiently trained to undertake the supervision



Fig 3 Traction by sheet around ankle

traction and suspension, or even by calipers, will be limited until a definite group of the attending staff, and their assistants intensively focus on this important phase of traumatic surgery.

For all cases in Group II, the non-displaced or the aligned group, our method of choice is a plaster-of-Paris spica for the neck of the femur variety and molded plaster-of-Paris anteroposterior splints for all the others

For the cases in Group I, the displaced or mal-aligned group, the method of choice is immediate preliminary traction in a Thomas splint or adhesive plaster straps with weights until per-

patient and his relatives may know what to expect.

Supplementing this operative treatment, the limb should be immobilized and local heat supplied, either as fomentation with hot boric acid and alcohol dressings or by using an incandescent lamp so arranged that its heat is directed on to the limb, or a combination of the two methods, the lamp tending to maintain the heat of the moist dressing. The patient should be freely purged and for this purpose, castor oil excels all other drugs. The patient should be given an abundance of good water to drink and often by giving water in the form of lemonade, aerated waters, mineral waters or weak tea, larger amounts may be drunk than if only plain water were offered. Large amounts of water provoke a diuresis and this, coupled with the purging, tends to increase the excretion of the toxins which the patient has absorbed from the diseased bone. With this treatment, the infection is rapidly overcome and no further extension of the process should occur.

The after-treatment consists in the removal of the gauze packing on the second or third day, or sooner if the temperature does not fall the day after operation. It is seldom necessary to insert rubber drainage-tubes, if the case has been diagnosed and operated on in the early hours of the disease. However, if the case has not reached the surgeon until the entire medullary cavity is filled with frank pus or even after the pus has begun to burrow in the soft parts, it is wise to remove the packing after 12 to 24 hours and to replace it by one or several drainage tubes, and this type of case will do very well when treated by Carrel's method, with frequent irrigations through many fine tubes each one leading down to the bone cavity. The wound should be kept open while it heals by granulation from the depths. It is occasionally possible to suture these wounds at their primary operation, leaving a corner of the wound open to permit removal of the gauze pack and for the insertion of a drainage tube if necessary. If doubt exists as to the wisdom of closing the wound at once, it should be left wide open and closed at a second operation after

healthy granulation tissue appears. This should be postponed, however, until the wound has become free from infection which can be determined by examining the secretion microscopically. One must bear the fact in mind that the presence of bacteria is proof of infection, but that the absence of bacteria microscopically is not sufficient evidence to prove that a wound is sterile.

The cases which are not seen by the surgeon until actual necrosis of a section of the shaft or for that matter the entire shaft present greater difficulty. It is in these cases that immediate excision of the necrotic bone should never be practiced.

I have been impressed with the importance of this rule many times in cases in which it seemed impossible to have any portion of the shaft of a long bone restored to normal. In these cases we employed the treatment described above of splitting all of the soft tissues longitudinally down through the periosteum for a distance of 2 to 5 centimeters beyond each end of the area apparently infected and elevating the periosteum from its attachment to the bone for a distance of 1 centimeter each side of this incision and then applying hot, moist, boric acid and alcohol dressings and placing a therapeutic lamp over all. It has been surprising in many of these cases how small the total loss of bone has been ultimately. The bone which seemed hopelessly dead in many instances seemed to act in the capacity of a bone graft, being replaced to the greatest extent by new bone so that ultimately only a very small portion of the bone was lost.

In one case, a girl of 14, in whom the attack was unusually violent, an incision over the entire dorsal surface of the first metatarsal bone showed this structure black from end to end ready to be removed entirely. The treatment described above was employed and in 12 weeks the wound was completely healed without the loss of any portion of the bone. The entire bone served as a bone graft. The healing has been permanent. In my experience this observation has never been repeated to the same extent but a sufficient amount of bone has been saved in a large number of cases to convince me that much

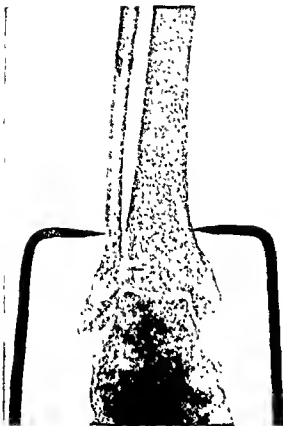


Fig 8 Calipers applied for fracture of the leg (after Pearson)

itself, and for this purpose there is the choice as between open operative correction, or by resorting to transfixion, the calipers, or the stirrup.

greater if penetration is just into the margin of the cortex, as so strongly advocated and employed by Pearson in his admirable war service at Edmonton, England. A further difficulty is that one or both sides of the calipers will extrude if the weights are released for an instant—and this is an occurrence to which we are all liable in the management of the average case. In military hospitals we had the advantage of a staff trained in fracture work by intensive experience; we had wards fitted especially for the care of that class of case, and best of all we had patients who co-operated and willingly obeyed orders. Incidentally the problem of the management of an extensively excised and much compounded fracture of the femur is a very different problem from the management of the ordinary simple

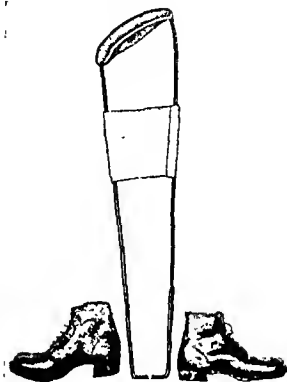


Fig 9 Walking calipers made of Thomas splint, the lower end of which is cut to be inserted into heel of a heavy shoe, as indicated (after Pearson)

fracture. The former is easy to reduce because of lessened muscle pull, but hard to retain for the same reason; the latter is harder to reduce but easier to retain.

Because of these named difficulties incident to traction by straps or the tongs, preference is given to transfixion in that irreducible group in which operation is the alternative. Open correction is never done unless as a part of the conversion of a compound into a simple fracture. Direct exposure and correction of a fractured femur in a muscular subject is an operation of considerable gravity, if plating or wiring is added, the procedure is hazardous, especially if the surgeon is unfamiliar with an ultraaseptic technique in which all hand contact is prohibited.

Transfixion or nail extension was first used by Codivilla of Bologna who passed a pin or nail through the os calcis in the treatment of fractures of the thigh and leg. Steinmann, of Berne, modified the procedure by penetrating the region of the condyles of the femur, and the method is commonly known as the nail extension method or the Codivilla-Steinmann nail method.

In each of the three methods described last the element of absolutely preventing any disturbance of the clot filling the cavity in the bone is of the very greatest importance. The failure to appreciate this fact has resulted in most of the bad results following the use of these methods.

In cases in which there is not sufficient tissue to cover the cavity the method described by Emil Beck of carrying what skin is available toward the bottom of the cavity without tension has given very satisfactory results.

In a number of cases in which the healing has been too slow, we have covered the granulating surface with Thiersch grafts. It is amazing to see how these troughs will fill up after covering the granulations with Thiersch grafts. Occasionally we have loosened long lateral flaps and have united these in front over the defect in the bone and then we have covered the defects on each side by means of Thiersch grafts.

RECURRENCE

In our cases recurrence has seemed to be due most commonly to the fact that during the primary treatment the source of infection was overlooked so that the patient suffered from a re-infection rather than a recurrence in the usual sense of the word.

Many of these patients state that they had a cold or a sore throat or a toothache just before their osteomyelitis recurred. Upon making a careful examination one finds a buried tonsil containing an abscess or an abscess at the root of a tooth or some other focus of infection. For thirty years we have removed these infected tonsils and roots of teeth in many cases in which recurrence had occurred, and the patient has repeatedly remained free from trouble for a number of years.

Trauma is another common cause of recurrence. Apparently some slight injury determines the return of infection to a bone that has previously been the seat of osteomyelitis.

Sugar. Patients consuming large quantities of sugar are subject to the development of furuncles and carbuncles and occasionally

this seems to be an element in determining the occurrence of recurrent osteomyelitis.

Cold and exposure. We have seen a number of recurrences following exposure to cold and wet. In these cases, however, there has been an infection of the tonsils, the sinuses or the air passages.

We have not been able to associate osteomyelitis with the occurrence of intestinal disturbances although *a priori* one would suppose that this might be a source of infection.

CONCLUSIONS

1. An early concise diagnosis and immediate surgical treatment is of the greatest importance.

2. The operation should invariably consist in splitting the periosteum for a distance of 2 to 5 centimeters beyond the area of pain upon pressure in the bone in each direction.

3. The periosteum should be loosened from the bone for a distance of 1 to 2 centimeters on each side of the incision.

4. In extremely severe cases this should be the extent of the primary operation.

5. In less severe cases ultimate healing can be hastened by carefully opening the medullary canal at the point previously located because of pain upon pressure.

6. Care should be employed to prevent traumatizing the tissues by rough chiseling.

7. Moist hot antiseptic dressings with fixation of the extremity and with the use of electric light treatment increases the comfort and facilitates healing.

8. The shaft of a long bone should never be removed until a good involucrum is formed.

9. In late cases or in secondary operations upon cases treated as above in the acute stage, every particle of dead tissue must be removed.

10. At this operation some definite plan must be carried out to facilitate closing the defect.

11. Skin grafting is of great value in many cases.

12. Local foci of infection such as abscesses of tonsils or teeth or sinuses, should invariably be eliminated at once upon undertaking the treatment of patients suffering from osteomyelitis.

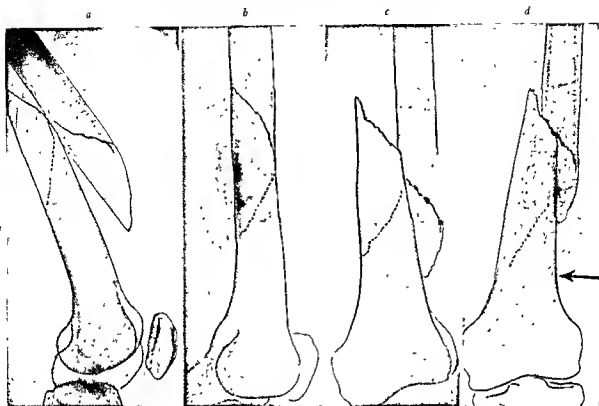


Fig. 11. Supracondylar fracture of the femur, *a* and *c* before, and *b* and *d* after reduction. Transfixion removed from level of arrow.

identical with the preceding. When the patient is abed, the knee is flexed to an angle of 135° (midway between a right angle and full extension), the foot of the bed is elevated 12 or more inches, and a weight of 25 to 40 pounds is attached to the cord leading from the spreader over the pulley at the foot of the bed. The knees are maintained in the desired degree of flexion in a three piece mattress bed, or on an inclined plane or on pillows—both knees being at the same angle. The direction of the traction is that of the plane of the upper fragment, and the knee must be so bent that it hangs free, and the thigh must rest on a perfectly flat surface. A bent Thomas, or a Hodgen splint can be used if desired. A sock is to be glued to the foot and a cord is fastened to this leading to a pulley so that the patient may daily move his knee to the limits of extension. A bandage about the ankle with a cord passing to an overhead pulley will accomplish the same purpose. No coaptation or other splints are needed and the entire limb is exposed except for the dressing over the pin and spreader. Traction is to be maintained long

enough to align the fragments and attain a fair degree of union. This usually requires a period of from 15 to 45 days. The pin will be loose enough to be readily removed if it has been *in situ* over 3 weeks, otherwise some force will be needed to dislodge it. Removal should be from within out, the protruding inner end previously sterilized by the flame from an alcohol lamp or by iodine. The wounds may appear more or less sloughy or superficially infected, but this disappears after a few dressings. A molded plaster-of-Paris or other dressing is applied after the transfixion is removed and this is worn until union is fully attained.

In a very low supracondylar fracture, transfixion can be made through the head of the tibia, or the stirrup over the os calcis can be employed. When union is still further advanced, the patient is allowed about on crutches or in walking calipers made of a Thomas splint, the lower end of which is cut off and turned into the heel of a heavy shoe. The absence of oedema, cyanosis, and joint stiffness is very striking in cases thus treated, and I am fully convinced that union is hastened.

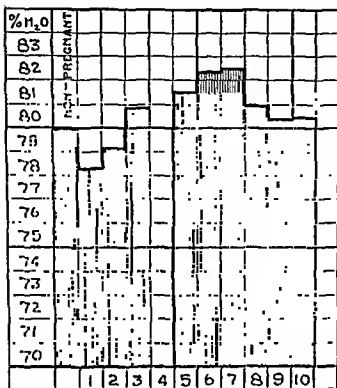


Chart 1. Moisture of whole blood. Vertical columns show month of pregnancy.

first month which may be attended with a low blood-moisture, the water increases gradually until the seventh month and subsequently falls. At the onset of labor we find that the water content of the blood is again approximately normal, and labor itself apparently exerts no characteristic influence upon this blood constituent. With regard to the plasma also, the relative amounts of moisture and of ash at the conclusion of labor are found to be practically identical with the corresponding values in the initial stage (Table III).

The relative amount of water in the blood varies inversely with the number of corpuscles. Very important, therefore, for the interpretation of our results are the curves representing the number of erythrocytes and the specific gravity of the blood at the various months of pregnancy which Thompson constructed (Charts 3 and 4). His graphs are the reverse of our own for the blood-moisture (Chart 1), and thus teach that an increase in the water of the blood goes hand in hand with a decrease in the corpuscular count. The corpuscular decrease is not the prime factor in this phenomenon, for from moisture determinations on the plasma, we derive a curve

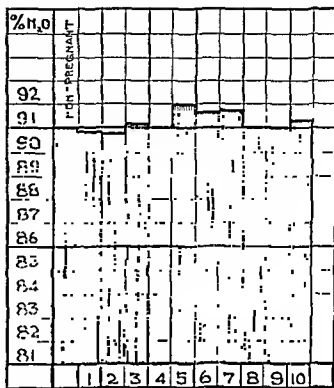


Chart 2. Moisture of plasma. Vertical columns show month of pregnancy.

(Chart 2) with smaller excursions but of the same type as that just described for the whole blood. Evidently, a relatively greater quantity of water in the blood harmonizes with the metabolic observations which demonstrate that the organism stores more water during pregnancy than at other times.

In view of the influence of the corpuscular count, the ash of the whole blood during pregnancy, as would be expected, varies from case to case. The plasma ash which is much less liable to individual variation remains normal throughout pregnancy.

The study of the placental interchange which was begun several years ago in this laboratory has recently been summed up by Slemmons as far as the results pertain to the organic constituents of the blood. The evidence regarding amino acids and glucose indicates that these substances pass from mother to foetus in accord with the laws of osmosis and the same explanation holds for the placental transmission of the foetal excretory products. On the other hand, both biological and chemical data demonstrate that fats and lipoids do not pass the placenta at all.



Fig. 11. Supracondylar fracture of the femur, *a* and *c* before, and *b* and *d* after reduction. Transfixion removed from level of arrow.

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TABLE I.—NORMAL WOMEN

Name	Whole Blood		Plasma	
	Moisture—per cent	Ash—per cent	Moisture—per cent	Ash—per cent
Case A	78.9	0.8	90.7	0.7
Case B	79.8	0.8	91.1	1.2
Case C	80.0	0.7	91.0	0.7
Case D	80.4	0.8	91.0	0.6

TABLE II.—PREGNANT WOMEN

Case	Age	Para	Period of Pregnancy	Whole Blood		Plasma	
				Moisture—per cent	Ash—per cent	Moisture—per cent	Ash—per cent
1	22	III	1 mo	78.3		90.0	
2	26	V	2 mo	78.6		90.0	
3	31	VIII	2 mo	79.8		90.8	
4	31	VIII	3 mo	80.2	0.9	90.9	0.8
5	26	III	3 mo	80.3		90.5	
6	37	I	3 mo	82.3	0.55	91.8	0.9
7	22	II	5 mo	80.7		91.9	
8	16	IV	5 mo	82.5	0.75	91.2	0.9
9	26	V	6 mo	83.8	0.5	91.3	0.6
10	20	X	6 mo	82.4	0.9	92.2	0.7
11	23	I	6 mo	81.0		91.1	
12	35	VIII	7 mo	82.5	0.6	91.6	0.8
13	23	I	7 mo	82.6	0.76	91.8	0.6
14	23	IV	8 mo	79.0	0.65	90.8	0.8
15	21	I	8 mo	81.8			
16	20	II	8 mo	81.4		91.2	
17	27	III	8 mo	81.1		91.5	
18	24	IV	8 mo	82.4		91.9	
19	27	IV	8 mo	80.8		91.8	
20	35	IV	8 mo	80.8	0.7	90.6	0.97
21	43	IV	9 mo	80.9	0.7	90.6	
22	27	IV	9 mo	79.4	0.75	91.4	0.8
23	15	I	0 mo	81.0		91.2	

TABLE III.—MATERNAL BLOOD DURING LABOR

Case	Age	Para	Onset				Conclusion				Remarks
			Whole Blood		Plasma		Whole Blood		Plasma		
			Moisture —per cent	Ash —per cent	Moisture —per cent	Ash —per cent	Moisture —per cent	Ash —per cent	Moisture —per cent	Ash —per cent	
24	24	I	78.6		91.3		80.6		91.3		Normal labor
25	30	III	82.1	0.75	91.8	0.7	79.7	0.8	91.0	0.8	Normal labor
26	27	I	82.6	0.8	91.8	0.8	83.4	0.9	91.7	0.95	Pre-eclamptic toxemia Blood pressure 150 mm. hg
27	38	VIII	79.3	0.8	91.8	0.9	78.8	0.94	91.6	0.95	Pre-eclamptic toxemia Blood pressure 150 mm hg
28	27	I	81.5		91.4						Normal labor
29	21	I	80.7		91.1		80.2				Normal labor
30	33	V	79.7	1.0	91.5	1.1					Nephritic toxemia without convulsions
31	28	III	70.3	0.7	91.1	1.0	80.3		91.3		Nephritic toxemia without convulsions
32	37	III	85.6	0.8	92.2	0.9	83.7	0.8	92.2	0.7	Eclampsia 8 months Blood pressure 150 mm hg Albuminuria 0.2 per cent
33	38	VI	81.0	1.0	92.0	1.2	81.5	0.9	92.0	0.8	Pre-eclamptic toxemia Blood pressure 180 mm hg Albuminuria, 0.5 per cent

water in the maternal specimen. Among the normal cases, the average moisture for maternal blood was 80.5 per cent and for fetal 76.8 per cent. If the fetus was alive, the maternal moisture was always the greater; and this result clearly would be explained by the red cell count which according to Ballan-

tyne is from a half to a million cells higher per cubic millimeter in fetal blood. On the other hand, in the plasma the slight excess of moisture is in favor of the fetus. Although the difference amounts approximately to only 1 per cent, it is a consistent difference applying equally to normal and complicated cases.

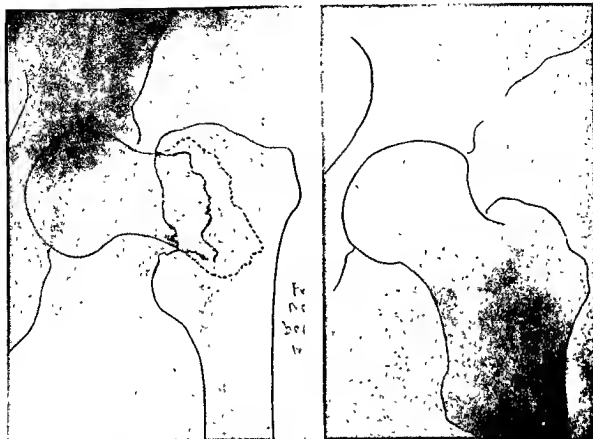


Fig 13 a (at left) Fracture neck of femur before reduction Female, aged 30 b Fracture neck of femur after reduction and application plaster spica

ture of the shaft of any of the long bones in a child under 15 is very likely to be compensated for by the normal growth, but in joint fractures this rule does not pertain, especially if the epiphysis has been involved and hence joint fractures require a greater degree of accurate coaptation than shaft fractures

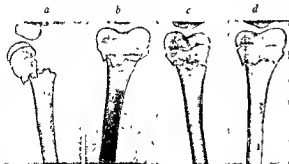


Fig 14 a Juxta-epiphyseal fracture before reduction b Juxta-epiphyseal fracture after reduction Note unusual anterior displacement of lower fragments

Our duty does not end when reduction is attained or union is accomplished; indeed the after-care may be as important as the initial or immediate care. Early massage and motion are essential if we aim to prevent adhesions in joints, tendons, or muscles, and this sort of prophylaxis will forestall an end-result that may be quite as crippling as that which follows shortening or bowing of bone. Weight-bearing should not be permitted until solidity of union has been well

established. The former rule of permitting weight-bearing only after a lapse of from 6 to 12 months must be modified, if we apply a form of treatment that immobilizes the limb only a few weeks instead of

or joint adhesions, and if there is little or no

On a *priori* grounds and likewise on the basis of previous analytical work relating to the comparative study of maternal and foetal blood, we would expect an equal concentration of water in maternal and foetal plasma, for, as we have said, excellent reasons exist for regarding the placental partition as a semipermeable membrane. It would seem, then, that some unrecognized physical or chemical factor takes part in balancing the osmotic pressures in the two circulations.

This factor may be sought in the unequal number of red corpuscles per unit volume of blood in the two organisms, for the corpuscles are not inert particles in suspension. The contents of each cell enclosed by a membrane must share in the adjustment of the osmotic pressure in the plasma. Moreover, we are not sufficiently familiar with the soluble, but non-diffusible substances of the plasma to know what rôle they play in its water concentration. Nucleon, the phosphocarnic acid which Sfameni isolated from foetal blood in amounts of about 0.2 per cent, may belong in this category. In view of the possibility of such factors acting toward the reduction of the water concentration of the foetal plasma and especially with so slight a difference between the mother and the foetus, our results, it seems, support the view that water passes the placenta with equal readiness in either direction.

In cases of toxæmia, the ash and moisture determinations yielded variable results. During the pre-eclamptic stage, that is before the onset of convulsions, the maternal values for whole blood and for plasma are within normal limits, but later in the presence of marked oedema the water content of both is increased. Venesection with subsequent administration of normal salt solution, usually causes a rise in moisture. An illustration of this phenomenon is afforded by Case 51 in which the determinations before and after the treatment in question yielded 80 and 82.3 per cent of moisture respectively.

From blood analysis it is impossible to distinguish between eclampsia and nephritic toxæmia which pathologists regard as distinct entities. Clinically, both are attended with albuminuria; but the former presents a

characteristic liver lesion, the latter only a renal lesion. The tendency toward a higher blood moisture appears in eclampsia. However, the same phenomenon was noted in a case of nephritis, and as a rule the blood moisture varies directly with the degree of oedema.

Our observations of the ash in cases of toxæmia are not comprehensive enough for a final opinion. Such complications are infrequent and to gather abundant data requires a long period of time. However, it is our impression that the values for the plasma ash will generally be found high in patients who develop convulsions.

CONCLUSIONS

1. During pregnancy the water content of the blood is usually found to be between 77 and 82 per cent, the accepted normal limits. The tendency is toward the upper extreme, and in one-third of our cases this was slightly exceeded.

2. Examined month by month during pregnancy characteristic fluctuations in the blood moisture become apparent. It increases gradually until the seventh month and subsequently remains stationary or slowly decreases. At the onset of labor it is approximately the same as in the early weeks of gestation. The act of labor has no constant influence upon the blood moisture.

3. The water content of the blood and the corpuscular count vary inversely.

4. The plasma moisture, examined month by month, presents the same type of variation as that characteristic of the whole blood.

5. Quantitatively the blood ash and the plasma ash are found to remain normal during pregnancy.

6. Eclampsia may not be distinguished from nephritis on the basis of blood moisture. In either complication, the percentage of water may be great enough to constitute a true hydræmia, which is usually presented by cases with marked general oedema.

7. Identical values for the ash in maternal and foetal plasma indicate that a free exchange of their inorganic constituents takes place through the placenta in accord with the laws of osmosis.

A METHOD OF APPLYING RADIUM IN CASES OF OESOPHAGEAL CANCER

By P. P. VINSON, M.D., ROCHESTER, MINNESOTA
The Mayo Foundation and Mayo Clinic

THERE is no condition in which the prognosis is more grave than in carcinoma of the oesophagus, and, since such cases are of relatively frequent occurrence, anything that

offers the unfortunate patients the slightest chance of cure should be thoroughly tested.

Radical operations on the oesophagus, in an effort to remove the growth, have been uni-

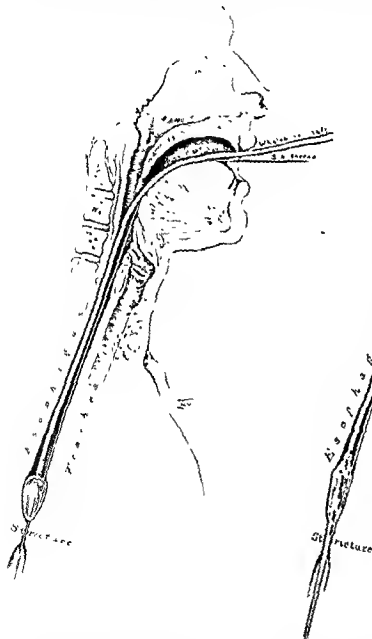


Fig. 1 Measuring the distance of the obstruction from the incisors

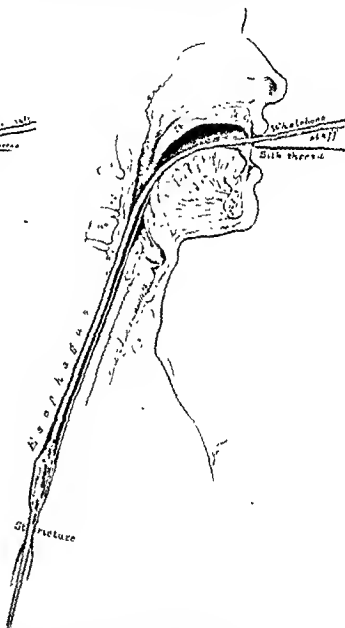


Fig. 2 Dilating olive guided on the thread by a flexible spiral

The term congenital hernia of the cord is truly a misnomer and really should be substituted by the term amniotic hernia, as I shall explain from my brief embryological review. This view is also endorsed by Moschcowitz, in his article entitled, "Pathogenesis of Umbilical Hernia," in which he states that a hernia into the umbilical cord is a congenital malformation and in no sense of the word a hernia; there is no valid reason, therefore, why this malformation should be included in a discussion of umbilical hernia, and he excludes it entirely from his discussion of the subject.

We recall that about the tenth week or so of foetal life, as already stated, the gut occupies part of the umbilical cord which later recedes to allow a complete closure of the ventral plates, thus forming the umbilicus. But as this hernia forms, or potentially so before the formation of an umbilicus, the term amniotic hernia is correct, inasmuch as the umbilicus is defined as a depression of the skin, due to the formation of an underlying cicatrix which is left by throwing off the cord.

The coverings of this type of hernia consist of (1) the amnion, (2) layer of Wharton's jelly, (3) a thin sac which is continuous with the peritoneum, and sufficiently transparent in most cases to permit of the contents being seen. The layer of Wharton's jelly may not always be present. The size of the hernia may vary from a tiny protrusion to an almost complete evisceration. The latter two or true umbilical herniae have for their coverings (1) skin, (2) fascia (rectus sheath), (3) peritoneum forming the sac, and are really a simple yielding of the umbilical scar due to incomplete closure of the mesoblastic layer in the infant; while the adult variety is commonly found in women and is associated with or without diastasis of the recti following several pregnancies. Space does not permit of a detailed description of the true umbilical herniae as compared with our subject, but I simply want to make it clear that a true amniotic hernia is one which consists essentially of a reflected amnion with peritoneum which protrudes from an incomplete closure of the abdominal wall.

AMNIOTIC UMBILICUS

This term was first introduced by Nicaise in 1881, who said that according to Wiederhofer it is characterized by an absence of skin around the umbilicus, the defect being replaced by amnion which is reflected upon the abdomen from the cord. In such cases the surrounding wall is generally intact. The amniotic umbilicus does not usually interfere with the health of a child. In a case mentioned by Nicaise the amniotic disc was gradually closed, being replaced by scar tissue and the umbilicus completely closed.

Just what causes the defect which allows the formation of this so-called amniotic umbilicus is not exactly known. It may be due to an excess of amnion; to an infolding of the amnion along the cord and skin; to a delayed recession of the gut into the abdomen; to an excessively large cord or lack of skin. However, one of the first explanations is that given by Runge in 1893, who in the course of a discussion of the subject, said that in rare instances there is a preponderance of amnion and a lack of skin at the umbilicus, and spoke of the condition as an amniotic umbilicus. Under these conditions with simply the amnion covering up the defect in the skin, the intra-abdominal pressure naturally forces out this thin membrane and forms a hernial protrusion. The size, of course, will vary depending on the amount of abdominal skin lacking over this area, the underlying muscular walls, and the increased abdominal pressure.

Cullen cites Stewart, who, in 1905, reported a case of hernia of the cord, the size of a very large apple, in a well-developed male child. The cord dropped off at the usual time leaving the sac exposed. The child did well and as the parents were anxious that something be done, a plastic was performed disregarding the advice of Stewart. The sac contained a portion of the intestine and the whole of the liver which was so adherent to the sac that separation was impossible.

In 1903, Dr. S. E. Sanderson, of Detroit, saw a similar case in which the defect in the abdominal wall was covered by a thin transparent membrane through which the entire abdominal contents were clearly visible, while the partly developed abdominal wall, composed

versally unsuccessful owing to the inaccessibility of the lesion and the usual poor general condition of the patient. Dilatations afford only temporary benefit, and gastrotomy is a nuisance both to

are in seemingly hopeless conditions, we began the use of radium in selected cases in which the lesion was not extensive.

The majority of patients who come under observation have had such restricted diets that they are very weak, and it is advisable to dilate the stricture forcibly so that food may be taken before treatment is begun. Treatment is not attempted on any patient who has complete oesophageal closure, and who is unable to swallow the silk thread which is so necessary as a guide in oesophageal instrumentation.

The patient first swallows four or five yards of silk thread, button-hole twist, as described in previous papers by Plummer.¹ With this as a guide a plain olive (Fig. 1) on a whalebone staff is passed down to the stricture and the distance of the obstruction from the incisors is carefully noted.

thread. The previous measurement on the staff shows when the spiral has passed the stricture and

After the dilatation has been carried to 40 or 50 F., the patient is urged to take fluids and semi-solid food for several days before treatment is

a whalebone staff fits rather snugly, but not too tightly. At its margins are two small perforations

through which is passed a doubled heavy fish line. It is essential that the margins of these perforations be smooth in order that they may not cut the fish line. *b* represents a solid knob about 55 F. in size. *c* is drilled out so that the walls are 1 millimeter thick, and this section is 7 millimeters wide and 4 centimeters long. The radium is placed in this cavity and *d* is screwed fast. Onto *d* is screwed the dilating olive and spiral, using an olive large enough to necessitate some force in passing it through the stricture. The distance of the growth from the incisor teeth is measured from the distal end of the dilating olive on the staff and the measurement on the staff is marked by a piece of adhesive.

The apparatus is passed down the oesophagus, guided by the swallowed thread, and when the measured point is on a level with the incisor teeth the obstruction is noted (Fig. 4). Moderate pressure forces the dilating olive beyond the malignant process, and after passing it down 3 inches, another obstruction is encountered. This is *b*, the knobbed portion of the apparatus made large enough so that it will not pass through the stricture. The lower olive prevents the instru-

ing, outside the mouth. When it is desired to discontinue the exposure, the instrument may be displaced upward by firm, slow pulling of the heavy thread. This is facilitated by making the pull over the index finger inserted far into the oropharynx. The first exposure is usually of from 3 to 4 hours, and later exposures are from 14 to 16 hours, using 50 milligrams radium salt, or its equivalent in emanations. About three exposures are used at the present time, in addition to the Coolidge tube treatments. Larger doses may be used at a later date.

The patient is perfectly comfortable with the radium in place, and the only complaint made after the treatment is the ordinary soreness in the throat which usually accompanies such manipulations.

Sufficient time has not elapsed to report any results from the use of radium in cases of oesophageal cancer, but these will be reported later.

¹Plummer, H. S. The value of a silk thread as a guide in oesophageal technique. *Surg., Gynec. & Obst.*, 1910, x, 519-523. Technique of the examination of oesophageal lesions. *Tr. Soc. Surg. Am. M. Ass.*, 1910, 345-353.



Fig. 1. Roentgenogram of author's case.



Fig. 2. Photograph of author's case

centimeters in diameter above the cord, the wall of the sac is separated into two layers by a collection of fluid. The fluid cannot be made to pass beyond the margins of the bleb-like area by pressure. The thorax is long and narrow.

Internal examination. A medium longitudinal incision is carried downward so as to pass to the left of the attachment of the hernia. The peritoneal cavity contains a small amount of blood-tinted fluid in which are fibrinous masses. The pleural and pericardial cavities are normal.

The thymus is small and extends to the superior border of the heart.

Heart. The right auricle and the cavæ are greatly distended. The vessels are given off from the heart normally.

Lungs. Both are crepitant and pale. The fissure between the upper and lower lobes of the left lung, and that between the upper and middle lobes of the right lung are not complete.

Abdominal cavity. When the anterior abdominal

it lies in the mid-line. The coils of intestine in the hernia are attached to each other and to the inner surface of the sac by a small amount of easily broken, yellowish, plastic exudate. From the lower portion of the anterior surface of the right lobe of the liver a short, vascularized, fibrous band 2 millimeters in diameter runs to the inner surface of the sac. The upper portion of the right lobe of the liver is broadly and closely attached to the inner surface of the sac by a thin layer of fibrous tissue, which is apparently the dislocated reflection of the peritoneum over the dome of the right lobe. The diaphragm is drawn downward in the mid-line anteriorly, and apparently the lengthening and narrowing of the thorax has been caused by the same traction. The bladder is elongated and its fundus is drawn upward out of the pelvis by the traction of the urachus, which runs to the

umbilicus included in the lower portion of the hernial sac. The umbilical vein runs along the inner surface of the anterior wall of the hernial sac from the liver to the umbilicus. The left kidney and adrenal lie high up in the left diaphragmatic vault.

vessels and the ureters take a normal course. On the left side there is a strong anastomosis between the adrenal and the renal veins. The gastrointestinal tract, pancreas, liver, and spleen bear normal relationships to each other, but all are dislocated anteriorly and to the right by the hernia. It is impossible to replace the organs in the abdominal cavity. When the organs are removed the abdominal cavity is found to be short and small, due in part to lengthening of the thorax by traction and in part to failure of the abdominal cavity to develop because of the hernia. The testes, which are normal, lie in the abdominal cavity at the level of the iliac crests. The umbilicus, which runs over the lower portion of the hernial sac for a short distance, is not otherwise involved in the hernia. The well-developed rectus muscles are separated by the contents of the hernia.

The spleen measures 4 by 2 by 1 centimeter. It is dark red in color and firm. There is a deep median notch.

The liver measures 8 by 6 by 3.5 centimeters. The left lobe is small. The tissue is dark red in color and is rather soft in consistency. The gall-bladder and ducts are normal.

Kidneys. Each measures 3.5 by 2.5 by 2 centimeters. They appear normal on section.

Microscopic examination. **Lung.** The tissue is incompletely expanded by air.

Spleen. Malpighian bodies are small and numerous. The pulp is moderately congested.

Liver. The liver cells are swollen and granular. Veins and capillaries are distended with blood. In a rather broad zone beneath the capsule the congestion is extreme and has led to atrophy of the intervening cords of liver cells through pressure.

Kidney. The tubular epithelium is swollen and cloudy.

Adrenal. The cortex is thick and contains much lipid material.

Intestine. The peritoneal surface is covered by fibrinopurulent exudate and the vessels of the wall are greatly distended by blood.

this purpose one of us (R. M. L.) has devised a special instrument described in a previous article. Usually 5 centimeters or more of emanation is imbedded and permanently left in place.

A short summary of a case of infiltrative bladder carcinoma, now apparently well, serves to illustrate the general scheme of treatment

On January 18, 1919, patient, woman, age 59, W, was referred to the staff of Dr. W. C. Cline, Boston, Wash.

normal. On base, beginning at internal orifice of urethra, on the inter-ureteric ridge, is a dark colored, bossed, ragged growth, encroaching on the left ureteral orifice, about cherry size, measuring $2/5$ centimeters antero-

January 24, 1919, 1167 millicuries were applied directly to one area in the bladder 3 minutes in brass tube.

February 7, 1919, 676 millicuries were applied on sound 2 1/2 minutes, intravesical treatment.

February 17, 1919, vaginal examination shows mass 3 by 2 centimeters in the anterior vaginal wall.

March 3, 1919, examination shows separation of a

to growth for 2 minutes through the belly cystoscope. The growth is 1 1/2 by 1 1/2 centimeters. On examination.

April 22, 1919, 212 millicuries on sound was held directly to the growth in the bladder for 5 minutes.

May 1, 1919, 199 millicuries in open-ended sound 1 minute against tumor, through the cystoscope. Again the growth is noted as much smaller. Nothing felt on vaginal examination.

June 13, 1919, nothing felt on vaginal examination.

July 24, 1919, bladder entirely normal except for white scar at site of former disease. Treatment, 972 millicuries to scar 4 minutes. Since this time we have seen patient at intervals. She has continued entirely well up to the time of writing (February 13, 1920). There has been no further hematuria and no frequency of voiding.

2 millimeters in thickness

epithelium. If this is amniotic epithelium, it becomes difficult to understand how both the space and the free surface could be covered with such epithelium. The only explanation which would appear to answer the conditions found, would be adhesion between amnion and anterior abdominal wall in the region of the hernia, with folding and duplication of the amnion in that portion of the hernial sac which contained the fluid filled space. The case apparently belongs to the common type of congenital abdominal hernia in which amniotic adhesion is considered the etiological factor.

TREATMENT

From the cases recorded it is obvious that operation immediately after birth is imperative in order to save the child's life.

Sanderson states, that the time to operate is immediately after birth before there is any drying out of the thin membrane covering the abdominal wall, and before the hernial protrusion has been increased in size by accumulation of fluid in the stomach. The only cases which are amenable to treatment by operation are those which are small enough so that their contents can be reduced into the abdomen and a closure of the abdomen effected. When resection of liver or other abdominal contents is required the child usually dies.

Olshausen method. This technique has been effective in small protrusions of this type. The method consists in separation of the skin around the sac, removal of Wharton's jelly, and reduction of the hernia *en masse* without opening the sac and suture of the skin.

Palliative. Small protrusions can be treated by carefully cleansing the parts, keeping them as nearly aseptic as possible and applying pressure to the hernial tumor by means of adhesive plaster, and encircling the entire abdomen.

SUMMARY

Amniotic hernia is a rare condition.

Congenital umbilical hernia of the cord is a misnomer and should be substituted by the term amniotic hernia.

The treatment, when resection of abdominal organs is not indicated is operative immediately after birth; for small protrusions or in case of failure to recognize the condition until late, is palliative.

I am deeply indebted to Dr O T Schultz, director of the Pathologic Research Institute of the Michael Reese Hospital for the above postmortem and pathologic report of this case.

the dead bone works out. Healing, he says, will not take place until all dead bone is removed. That is a crude way of describing the same methods we are employing today.

It is also interesting to note that Pasteur was one of the first to recognize and speak of sore throat, carious teeth, and other local infections as causes of osteomyelitis. In one of his early works Pasteur spoke of what he called *ostitis furunculosa*. From a furuncle on the hand an abscess developed in the bone, and he speaks of *furunculosis of the bone*. Quite a number of modern authors have also quoted this observation. Scientifically and technically it has been developed only in the last few years by Rosenow and experimentally demonstrated as correct.

As far as therapy of acute osteomyelitis is concerned, the treatment described by Dr. Ochsner is ideal. Very often bone that seems absolutely dead and useless, the removal of which will cause an opening of channels through which sepsis may be transmitted and death follow, will recover.

In chronic cases I have also followed the older methods of treatment by the Mosetig-Moorhof plug and have not been successful, and I have come to the conclusion that a cavity in a bone, after all necrotic material has been removed, cannot be successfully made aseptic. It may be possible in a very exceptional case to make it aseptic, but absolute asepsis cannot be assured by any process, neither by fire nor by chemical, because such agents do not penetrate deeply enough to destroy the infected material. Therefore, I have long given up any attempt to close such cavities with any foreign material.

In a recent number of the *Annals of Surgery* there appears an article by Martin who implanted fat into such cavities. This method under rare conditions may be successful. The cavity may also be filled with blood clots.

In our experience we have found it absolutely necessary to reduce a cavity to a surface, whether by the use of epithelial skin flaps or skin grafts. Secretion must be stopped in order to heal the cavity.
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but w
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or ribs,
the cav
is almost impossible.

I showed those who visited our clinic this morning two interesting cases from which I learned a new lesson in dealing with these cases. The operative treatment of fractures has become more frequent. Many surgeons, as you know, operate early, and as a result of their surgical manipulations produce osteomyelitis which is harder to heal than osteomyelitis from infection. I stated this morning that I should judge about 10 per cent of all cases of osteomyelitis coming under our observation are due to badly treated fractures. The result is newly-

formed bone and a lot of cavities around the fractured ends of bone, and these are very difficult to heal. I have feared that it is necessary sometimes to cut all of the muscles. In one case this was done with the anterior muscle of the femur in order to get down to the cavity. In another case I cut all muscles from the side of the femur in order to make the cavity as shallow as possible in treating the osteomyelitis.

It is difficult to treat a cavity of the hip-joint. I had a case of osteomyelitis on which the late Dr. Senn operated eighteen years ago. Following his operation of removal of the head of the femur the girl had a chronic osteomyelitis with a discharging fistula of the hip-joint. It would not heal until I removed the lateral portion down to the osteomyelitic cavity, which was closed by a flap.

DR. EDWIN W. RYERSON: My experience with acute osteomyelitis is quite limited. I have treated perhaps 22 or 25 cases. I was much interested to hear what Dr. Ochsner had to say about splitting the periosteum. It hardly seems to me offhand that it would be a rational thing to do because the focus of infection is in the medullary cavity, and I

cannot to do too much. It should not be done, as Dr. Ochsner and Dr. Beck have said. We should give the bone a chance because the reparative properties of bone are excellent, even in the presence of infection. In a case of osteomyelitis of the tibia,

number of years ago I read a very comprehensive, careful, well considered article by Simmons, of Boston, which was published in the *Boston Medical and Surgical Journal*, in which he expressed the belief that if we could select the proper time for taking out the entire shaft of the bone which was osteomyelitic, we should get in every case a complete reformation of the entire shaft of bone. I have seen three cases of complete reformation of the entire tibia in which the bone was entirely destroyed to the epiphyses. The epiphyses are never involved, at least early, in the disease, and it is always limited to the diaphysis. In these three cases of which I have personal knowledge, the entire tibia was reformed. In another case upon which I operated we did not get a reformed tibia, and it was evident we had waited too long and expected too much of the osteogenetic remains of the bone. That case had to be treated by bone grafts, after a complete craterization of the cavity, reducing the cavity to an open, almost flat surface, which forms the

that aims to expose the fracture site to vision by the excision of all bruised or otherwise damaged tissue. This *débridement* and primary suture we reserve for selected cases; we do not practice it in badly comminuted cases nor when the injury is more than 24 hours old. The safest procedure in converting any compound into a simple fracture is to resort to primo-secondary or delayed primary suture in which all the steps except suture are taken, and the actual suturing is performed between the third and sixth day, when we are assured clinically and bacteriologically of the asep- sis of our wound. An already infected fracture is a problem in osteomyelitis, and the method of progressive chemical sterilization must be our treatment.

We recognize that non-union usually means mal-union brought about by faulty reduction or faulty retention (too loose or too tight splintage). The next commonest source of non-union is interposition of soft or hard parts, in effect a spontaneous arthroplasty. We do not believe syphilis to be a common cause of non-union, but do believe that cardiovascular disease is a considerable factor. Likewise focal infection, especially of the teeth, is an element in this process, we have also had non-union in those who never ate meat or never ate vegetables. As to frequency, non-union of the femur is fourth on the list beginning with the tibia, forearm, humerus. We rarely see non-union in the fibula despite the marked overriding so often found in this fracture. This is probably due to the very large nutrient canal. Non-union in any joint-fracture except the neck of the femur is exceedingly rare.

We recognize that the introduction of non-absorbable material to act as an internal splint is occasionally necessary, but this should be the last resort even in selected cases. The operator should possess unusual mechanical skill and be prepared to exercise an ultraaseptic technique in which all hand contact with the wound is prevented. Infection after plating or wiring is a regrettable occurrence in the leg or arm; in the thigh it has often been a tragedy. The tolerance of the tissues to this form of foreign body has frequently been evidenced, but the majority of surgeons now remove the plate or wire after it has served its purpose.

We recognize the danger of applying encircling plaster—
the der-
renderir

For these reasons, fracture of the neck of the femur is the only displaced variety of fracture subjected to this type of encasement.



Fig 1 Plaster spica for fracture of femur. Note extent of abduction.

These are some of the essential principles, they are the foundations on which our treatment is based. We will never obtain standardization or uniformity of results until we agree upon the precepts and practices in fracture surgery after the manner of agreement in other branches of surgery.

For purposes of reduction we have resort to either non-operative or operative methods.

Non-operative or external reductive methods consist of—

1. Manual reduction which is completed in one stage;

child was brought into the hospital with diffused involvement of the shaft of the humerus. From the X-ray picture I thought that the entire shaft was dead. The child's life certainly appeared to be in great danger, and it seemed to me that nothing less than a total resection of the diaphysis, leaving the wound open, would result in saving this child. The parents refused all treatment except incision. I made an extensive incision of the periosteum as advised by Dr. Ochsner and to my astonishment the patient recovered. At one time the wound was all healed over and his arm very shapely, but later a sinus appeared from which I extracted a small sequestrum, after which it healed.

DR. KELLOGG SPEED: I have never published a paper on the subject of acute osteomyelitis but in 1914 I operated within a few weeks 5 cases of acute osteomyelitis, 4 of the humerus, and 1 of the femur. Based on the pathology of a rapid extension of the process in the medullary cavity, as shown in the specimens, the periosteum was reflected, and there was performed complete subperiosteal resection of the shaft. Two of the humeri developed perfect bone, perfect arms. The third was nearly perfect, and 9 months afterward the patient fell and broke the newly formed shaft and it reunited in due course. In the fourth humerus we had more or less bony regeneration, but it was not perfect. The femur case was not satisfactory, and a bone transplant had to be inserted later.

At that time I formulated certain rules of my own, and they were about as follows: First, when a bone is subperiosteally resected, extension must be put on the limb to keep it stretched out to its former length, for obvious reasons. In putting stress on the periosteum you stimulate it. The periosteum should be kept dilated and distended at or about its former size, stimulating the formation of bone from the cambian layer, so that new bone will approximate

the old bone.

physiologic activity. These cases must be kept in extension for a long time until bone forms firmly enough to take up the stress of muscle contraction.

After operating on these five cases, I have not performed complete subperiosteal resection on any case since. I believe what Dr. Ochsner tells us, that dead bone acts as a splint and will take care of itself in the process of regeneration. I think a gutter should be made and the bone drained in the manner that he described.

DR. CARL B. DAVIS: In resecting the entire diaphysis of the shaft in children and in adults, I should like to call attention to a paper by Stiles, read at the Los Angeles meeting of the American Medical Association, and published in the *Journal of the American Medical Association*, in which he gave the statistics of numerous cases of resections of various types, and showed that the tibia and other bones will regenerate when the shaft is taken out

from one epiphyseal line to the other. We ought to differentiate between children and adults in considering these cases. In the majority of cases in

tendency seems to be for the individual surgeon to treat all his cases alike. I see every now and then such cases as Dr. Ochsner has described where there is pus between bone and periosteum, but no focus in the bone itself so far as one or two exploratory drillings indicate. In such cases I am at a loss to know whether I am dealing with a suppurative periosteitis or whether there is some small focus of osteomyelitis present which I have failed to locate and ought to hunt for further. If we are dealing in such cases with a suppurative periosteitis merely, of course there is no particular necessity of opening up the marrow of the bone, but when exploratory drilling reveals medullary pus, I have hitherto followed the commonly accepted practice of opening up widely and draining

pus evacuated freely. That has been my practice in such cases up to the present time.

There is still another type of bone pathology in which subperiosteal pus is found. The pus may be seropurulent, serohæmorrhagic or thick and purulent; but when the cortex of the bone is chiseled away no bleeding takes place from the medullary cavity which appears red and hæmorrhagic instead of normal fatty or lymphoid marrow. I interpret this finding as a medullary thrombosis. What should one do in a case like that? Is pus going to be formed eventually and should the whole medullary cavity be opened wide, or should we be satisfied to pack only the external wound and leave the thrombosed mass undisturbed? I am in a quandary about such cases and have tried both methods without seeing much difference in the results. I should like to know what Dr. Ochsner does in such cases. Certainly he would be justified in not opening up the medullary cavity in such cases if he could be certain that medullary suppuration would not ensue.

DR. NORMAN KERR: I would like to speak of our experience in Hospital No. 41, where we had about 50 cases come under our observation. In the first place, we injected the osteomyelitic focus with zinc chloride, followed by 20 per cent alcoholic solution of methylene blue stain. Then we did the radical operation, as explained by Dr. Beck and Dr.

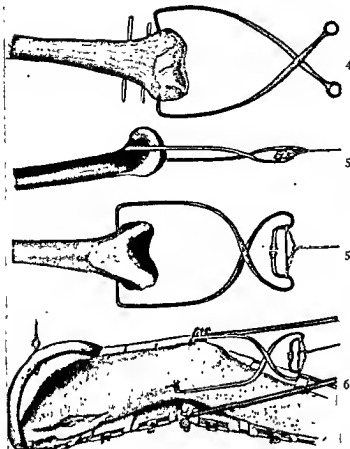


Fig 4 Calipers (U S Army type) applied to condyles Transfixion pins as used in the condylar or supracondylar areas

Fig 5 Calipers applied—anteroposterior and lateral views (after Pearson)

Fig 6 Calipers inserted and Thomas hinged splint applied (after Pearson).

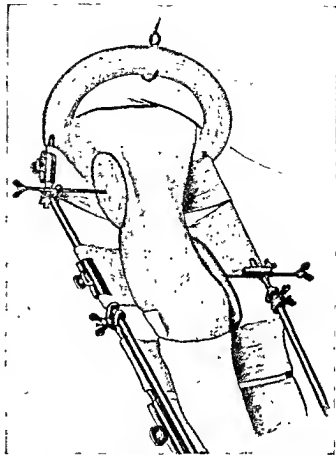


Fig 7 Thomas splint showing use of pressure pads to correct angular deformity (after Pearson)

manent reduction can be made under anaesthesia with or without a traction table, at which time a split plaster-of-Paris spica is applied. The earlier the reduction, the easier and more satisfactory. However, experience has taught that in some cases, the primary attempt at reduction is wholly unsatisfactory or is incomplete; hence our rule is to make two attempts before resorting to skeletal traction or open operation.

There are certain fractures in which no external method of correction has given me satisfactory results and for want of a better name, these are called "the irreducibles" and in these skeletal traction has become the sole resort. This group consists of all supracondylar forms with typical backward displacement of the lower fragment; all subtrochanteric forms with much displacement; all of the shaft in very muscular individuals in which there is overlapping of over an inch; and in any form (except the neck) in which more than a week has elapsed without cor-

rection. The need for skeletal traction is the greater in compound forms and in those in which

forms are as a rule rather readily reduced and are much more likely to result in solid union than those of the opposite types.

To repeat then, all the reducible varieties are treated either in a plaster spica or molded plaster strips, the irreducibles are treated by skeletal traction, preferably by the transfixion method. The use of the Buck's extension and allied apparatus has been practically completely superseded by other forms of external traction in which the Thomas, Hodgen, or Blake-Keller splint is used. Apparatus of this type is very efficient in the maintenance of constant traction and it is not by any means a method of choice for the oc-

CORRESPONDENCE

TRACHELOPLASTY FOR CHRONIC ENDOCERVICITIS

To the Editor Tracheloplasty, as a curative procedure in the treatment of chronic endocervicitis and the accompanying cellular tissue inflammations, became a widely-accepted addition to the armament of the gynecologist after it was established that cervical lacerations *per se* do not result in chronic endocervicitis but that infection is necessary to produce the typical lesion, that the lymphatics draining the cervix furnish the paths along which extension of the infection and inflammation occur, and that the infected surface does not extend upward beyond the internal os into the corporal endometrium. The operation of amputation of the cervix has been discarded because it is frequently followed by serious hæmorrhage, because pre-existing menorrhagia or dysmenorrhœa is often intensified, because sterility may be produced in a considerable percentage of cases which might otherwise become pregnant, because premature labor may be brought about in cases which do become pregnant after amputation, and because cervical dystocia is produced in many patients coming to full term. From the mechanical standpoint, trachelorrhaphy can

treatment

In his book on *Gynoplastic Technology* Sturmhorst, who has made an extensive study of endocervicitis from the standpoint of pathology and curative surgery, states

"Chronic endocervicitis is primarily and essentially an infection of the deeply situated, terminal tufts of the endocervical muciparous glands. These glandular sacculi harbor the infecting organism for years or a life time

"To cure endocervicitis we must remove the entire infected area of endocervical mucosa, as long as endocervicitis persists, so long will its symptoms persist

"The cure of chronic endocervicitis demands
"Complete enucleation of the entire endocervical mucosa from the external to the internal os with

of mucosa from the vaginal sheath of the cervix

' 2 Enucleation of the entire endocervical mucosa to the internal os, with preservation of its surrounding muscular layer "

Does the operation of tracheloplasty remove the infected and infecting material?

The compound racemose glands of the cervix normally dip very deeply into the surrounding fibromuscular stroma. When their epithelium is penetrated by bacteria, the stroma becomes infiltrated with polymorphonuclear cells and exudation of plasma occurs as the reaction of the tissue. Continued infection followed by exudation and infiltration causes oedema, seen clinically as engorgement, softening, and lividity. Small, round-cell deposition is then seen. Then frequently occlusion of the ducts of nabothian glands occurs with the production of retention cysts, or if suppuration ensues, of abscesses. Sometimes these retention cysts show through

Who can tell, macroscopically, what line limits the extension of infected, hypertrophied glands in that direction?

What is the rationale for the removal of a cone-shaped wedge with the apex at the internal os when there is reason to believe that the infected glands penetrate as deeply in that region as in the neighborhood of the external os?

With these questions in mind the following experiment was tried. In undoubted cases of chronic endocervicitis, after removing a cone-shaped wedge containing the endocervical mucosa after the technique of Sturmhorst, a piece of tissue from the new canal wall was excised, before relining with the mobilized vaginal cuff. This, upon section and staining, showed glandular elements and surrounding inflammatory reaction similar to the tissue removed in the cone-shaped wedge. Repeated confirmation of the results strongly suggest that (a) mere

the cervical musculature; and (c) that in some instances it is impossible to remove all the infective material without removing musculature in which it is embedded.

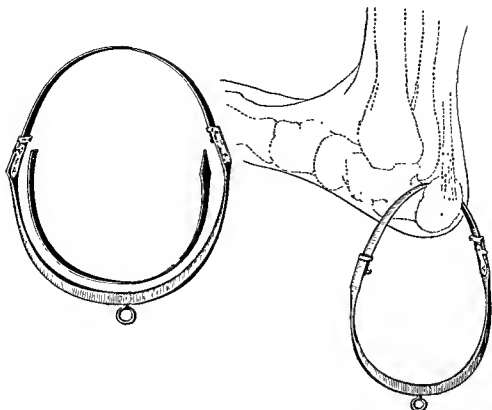


Fig 10 Tinochietto stirrup and method of obtaining traction by passing it over the os calcis.

METHOD OF INTRODUCTION

Local anæsthesia is said to suffice, but general narcosis is better. The knee is flexed to about 165° on a sandbag, and the region of the lower thigh to below the knee is shaved and iodized. If the fracture is of the low supracondylar type, the condyles are to be transfixed, otherwise the flaring part above them (supracondyloid ridge) may be chosen. If the condyles are involved, or if there is a wound in their proximity, transfixion can be made through the tibia just below the level of the tubercle. The internal condyle and the adductor tubercle just above it are readily identified and serve as landmarks.

Having located the internal condyle, the external condyle can be located by spanning the limb with the thumb and middle finger. If the condyles are to be transfixed, make a vertical incision $\frac{3}{4}$ inch long just above and on a line with the external condyle, bearing in mind that the latter and the great trochanter are in the same vertical plane. Let this incision be made while the skin is drawn upward, and pass the knife down to bone. Withdraw the knife and pass a grooved director along the incision so that it impinges against the bone. Now palpate with the point of the director to determine if the center of the bone is directly beneath; this will avoid

invading the synovial pouch or the popliteal space. With the director in place, pass the steel pin (about $\frac{1}{8}$ inch diameter and 6 or more inches long) along the groove of the director until the point of the pin catches in the bone. Withdraw the director and pass the pin directly through the bone at right angles, using an augur-like handle or a carpenter's or other brace. If the pin is hammered in, splintering may occur. The assistant at the opposite side of the table makes pressure at the inner side of the limb, and when the point of the pin impinges the skin on the opposite side, an incision is made as on the outer side, and the point of the pin is extruded through this. Gauze pads wrung out in iodine water (one dram iodine to 1 pint of sterile water) are threaded over each end of the pin so that the wound is completely covered. The "spreader" is then attached, screwed into place, and a large dressing of dry gauze and cotton is then applied, special padding being placed to keep the arcs of the spreader from touching the top of the knee. The pin should be long enough so that at least $\frac{3}{4}$ inch of it protrudes on each side.

If the transfixion is to be made through the supracondyloid ridge, the original external incision is made at a point 2 inches above the external condyle, the rest of the procedure being

profession is willing to admit, but it is our belief that the condition mentioned above will answer for many of the apoplexies

I have searched the literature but find nothing on the subject except in Gray's *Anatomy*. After describing the axis and stating that these shapes and conditions are to prevent displacement from the transverse ligaments, which binds it to the anterior

arch of the atlas Gray says "Sometimes, however, this process does become displaced, especially in children in whom the ligaments are more relaxed, and instant death is the result of this accident."

I had no permission to hold an autopsy to prove my findings, neither have I had an opportunity to X-ray any of them

PITTSBURGH, PA

C. C. HERSMAN, M.D.

BOOKS RECEIVED

space permits

SIMPLIFIED INFANT FEEDING with eighty illustrative cases. By Roger H. Dennett, B.S., M.D. 2d ed revised and enlarged. Philadelphia and London: J. B. Lippincott Company, 1920

HANDBUCH DER KLINISCHEN HYDRO-, BALNEO-, UND KLIMATOTHERAPIE. By Prof. Dr. Alois Strasser, Dr. Franz Kisch, and Prof. Dr. E. Sommer. Berlin and Vienna: Urban & Schwarzenberg, 1920

TASCHENBUCH DER FRAUENHEILKUNDE. By Dr. Koblanek. 2d ed revised. Berlin and Vienna, Urban & Schwarzenberg, 1920

EMPIRE, TREATMENT OF EMPYEMA. By Professor Eugenio Morelli, translated from the Italian by Lincoln Davis, formerly Lieutenant Colonel, M.C., U.S.A., and Frederick C. Irving, formerly Major, M.C., U.S.A. Boston: W. M. Leonard, 1920

LEITFADEN DER KINDERHEILKUNDE FÜR STUDIERENDE UND AERZTE. By Dr. Walter Birk. 1st part. **SAEUGLINGSANERKENNUNG**. 4th ed revised and enlarged. Bonn: A. Marcus and E. Webers Verlag, 1920

HUMAN PARASITOLOGY, WITH NOTES ON BACTERIOLOGY, MYCOLOGY, LABORATORY DIAGNOSIS, HEMATOLOGY AND

SEROLOGY. By Damasco Rivas, B.S. Biol., M.S., M.D., Ph.D. Philadelphia and London: W. B. Saunders Company, 1920

Sharpe, M.D. Philadelphia and London: J. B. Lippincott Company, 1920

INTERNATIONAL CLINICS, a quarterly of illustrated

ders Company, 1920

DISEASES OF CHILDREN PRESENTED IN TWO HUNDRED CASE HISTORIES OF ACTUAL PATIENTS SELECTED TO ILLUSTRATE THE DIAGNOSIS, PROGNOSIS, AND TREATMENT OF THE DISEASES OF INFANCY AND CHILDHOOD, with an introductory section on the normal development and physical examination of infants and children. By John Lovett Morse, A.M., M.D. 3d ed. Boston: W. M. Leonard, 1920

DIE THERAPIE AN DER BONNER UNIVERSITÄTSKLINIKEN. By Prof. Dr. Rudolf Finkelnburg. Bonn: A. Marcus and L. Webers Verlag, 1920



Fig. 12. Refracture supracondylar of femur. *a* and *b*, one year after original injury. *c* and *d* transfixion applied

The method was first used by me in 1913 in a series of some 14 cases at Harlem Hospital, many of them in children. To date there has been one infection of the deeper parts involving the periosteum cortex, but this speedily cleared up. There have been no fatalities. In a recent case I was obliged to remove the transfixion because the patient was obstreperous and in this instance the original deformity was not fully overcome. When the procedure is properly carried out and when the patient properly co-operates, reduction is virtually assured. Overcorrection is not unusual, but this is a good fault.

The merits of the method are:

1. It requires no very great skill, no special instruments, no prolonged anaesthesia.
2. It is adaptable for home treatment or where there are no especially trained attendants.
3. The nursing care is minimized because the patient has considerable freedom and is virtually in a semi-seated position.
4. The introduction of the transfixer at a distance from the actual site of the fracture does not re-traumatize an already damaged area.
5. The safety and certainty of the method makes a happy choice by comparison with open operation.

6. It is relatively painless despite the resemblance to a barbarous custom.

7. It permits inspection of the entire limb and joint freedom.

8. It combines reduction and splinting and once introduced requires only ordinary supervision.

The demerits are:

1. Danger of infection of the bone.
2. Damage to the popliteal vessels and joint bursae.

These are elements to be considered, but with ordinary care they can be avoided.

The Finochietto stirrup or the Chutro modification of it is the remaining form of skeletal traction. This device is passed over the concavity of the os calcis but I have not found it as efficient as the transfixion. A similar effect is obtained by passing a transfixion pin over or through the os calcis, attaching thereto the same spreader used in transfixing the femur.

Management of fracture of the femur in children less than 5 years of age is either by the overhead slinging up method of both extremities or by a plaster-of-Paris spica. Beyond this age, treatment is the same as for similar cases in adults. The deformity remaining after the frac-

THE JOHN B. MURPHY MEMORIAL

THE untimely death of our master surgeon four years ago brought forth an earnest demand for a suitable memorial to commemorate his distinguished services to humanity and to the science and art of surgery.

The John B. Murphy Memorial Association was incorporated at that time by a group of lay and professional friends. However, the entrance of our country into the World War scattered the incorporators and caused a temporary cessation of the activities of the Association.

heroic, but that it should embody permanence, strength, idealism, purpose, and service. Being agreed upon this basis, it seemed appropriate that this memorial should be allied with a living organization which at the same time would afford an opportunity for a permanent home, the monumental feature of which would serve as the direct expression of those desirous of perpetuating the memory of Dr. Murphy. Therefore, a living, useful, permanent and scientific organization, devoted to the work to which Dr. Murphy gave his life, was sought and found in the American College of Surgeons.

PERMANENT HOME

A few months since, the Board of Regents of the American College of Surgeons decided that the work of the College, which had been greatly hampered during the war, should be developed as rapidly as possible, and that a permanent home for the organization should be established without further delay.

After careful consideration, Chicago was decided upon as the city best serving the required purposes, and a very desirable site, the gift of a number of prominent citizens, was formally accepted by the Regents in behalf of the College. This site comprises a fine building, well adapted to the executive offices of the organization, and also adjacent vacant ground sufficient to accommodate a suitable memorial building.

MEMORIAL HALL

The American College of Surgeons has tendered its vacant property to the Memorial Association with the stipulation that the latter Association build upon it a permanent structure to be known as the John B. Murphy Memorial Hall of the American College of Surgeons.

The Association contemplates expend

become the property

in perpetuity by that organization.

The proposed building will meet the essential requirements hereinbefore outlined, permanency is assured; the memorial will be in the form of a living power for the advancement of surgery along scientific and moral lines, architecturally, it will constitute a dignified and ornamental monument, and in form

œdema or cyanosis, assuredly that patient is ready for duty much earlier than the patient who has a united fracture but a shriveled limb, stiff joints, and tendons, and a boggy blue extremity.

CONCLUSIONS

1. Treatment of fracture of the femur starts with first aid designed to place the limb at rest in traction in a Thomas splint, or in traction straps with weights attached. Ambulance surgeons and first aid men should be supplied with Thomas splints.

2. The patient and not the fracture will demand most attention in the feeble or diseased.

3. Any method that does not combine reduction with early massage and motion fails to give the maximum service.

4. The former idea that deformity and disability are inevitable in femur fractures should be abandoned.

5. Two attempts at reduction should be made before skeletal traction or open operation is performed.

6. For the non-displaced and reducible group, plaster-of-Paris (spica or molded) is an efficient form of splintage.

7. In the irreducible group described, skeletal traction by transfixion offers safe, efficient method.

8. This fracture entitles the patient to a high grade of surgical care and exacts from the surgeon a degree of diligence and skill at least equal to that necessary in the management of many other major surgical problems.

9. Fractures have been too much slighted by surgeons and for that reason the fracture field is being encroached upon by orthopedists who by their training are better fitted for the after-care than for the initial care of this acute variety of traumatic surgery.

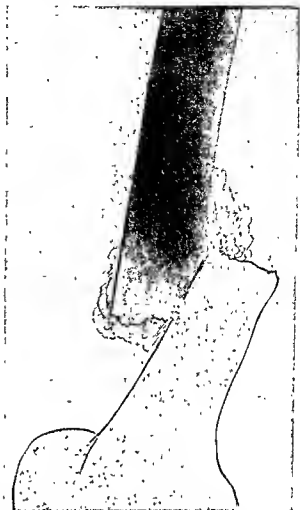


Fig 15. Unreduced supracondylar fracture of femur, end result

10. There is great need for standardization and uniformity in fracture work and in no group is this more necessary than in fractures of the femur.

The medical profession, from the Atlantic to the Pacific, sent numberless tributes. Among them, William J. Mayo, M.D., Rochester, Minnesota: "In the death of Dr. Murphy, America has lost its foremost surgeon." George W. Crile, M.D., Cleveland, Ohio: "His teachings have influenced not only the American continent, but also Europe and the far East, for Murphy taught the

... .. New York City: "The
... .. ney, M.D., Baltimore,
... .. er, a splendid surgeon,
a true friend, a real man, his going has left a gap that can never be filled"

Arthur L. Lynch, M.D., Saskatoon, Saskatchewan: "Not only have the sur-
of the ablest and foremost teachers
ust as keenly the death of Dr. Mur-
Ontario: "He was as well known

here as at his home in Chicago

From his home city expressions of a similar nature were practically unanimous. A limited number only will serve our purpose. A. J. Ochsner, M.D.: "Dr. Murphy was the one man whom the whole surgical world knew as a great American surgeon." W. A. Evans, M.D.: "He was the greatest surgeon of his day in the world." Frank Billings, M.D.: "Dr. Murphy is gone, but his work will live."
... .. Evan, M.D.:
... .. oduced."

Edmund J.

James, President, University of Illinois: "The world has lost one of its most efficient and helpful citizens." Judge Edward O. Brown, Chicago: "All the world knows of his great genius and his devotion to the services of humanity."

SUMMARY

Dr. Murphy's worth and leadership, so far as the worth and leadership of a genius can be analyzed, may be summarized as follows: Gifted with extraordinary native ability, he concentrated on a great struggle to realize his ideal of a life full of useful service. He mastered the fundamental principles and the mechanical technique of an exacting science. By drill and discipline, he became master in the fields of the art and science of medicine, and solved by original investigations the intricate problems of his art. His contemporaries acknowledge that the scientific contributions of Dr. Murphy for the advance of medicine and surgery have never been equaled, either in range or in worth, by any other individual in the profession. As a teacher with power to inspire young men to their greatest usefulness, both in the science of medicine and as citizens, Dr. Murphy stood without peer. His charm, kindness, force, and the ability to untangle difficult propositions by simple, clear-cut exposition, gave him rank as the great surgical teacher of his era. He went from task to task with complete
their honor and
was attained

in his home with his wife and children. Dr. Murphy was true to his convictions. He possessed a clean conscience, a profound religious sense, and a constant devotion to the Church of which he was a communicant.

upper jaw by properly molded dental splints cemented to the crowns of the teeth and wired together to secure proper dental occlusion.

The fractured area is exposed through a skin incision, below and along the ramus of the jaw. the posterior fragment seized and drawn into proper alignment with the anterior fragment and held by bullet forceps in the hand of an assistant. The fragments are drilled for the required distance. The drill is disengaged from the motor and left *in situ* in jaw fragments while the section of cortical bone is being removed from the tibia and shaped in the motor-driven dowel shaper accurately to correspond to the diameter of the drill. The bone dowel is grasped at one end with strong forceps, the posterior fragment again held steady in position by the assistant, the drill withdrawn by the operator, and the bone dowel pin immediately inserted and driven home by a few taps from the mallet. The diameters of the drills I have used are three-sixteenths and one-fourth inches with dowel shapers to correspond, depending upon the age of the patient and the thickness of the jaw fragments. Should the judgment of the operator deem it advisable, a second dowel can be inserted above the first and in the same manner.

No graft retention sutures are required nor further traumatism to jaw fragments. The soft parts are drawn down over the field operated upon and the skin sutured by continuous subcuticular or mattress suture, suitable dressings applied, and tube feeding or soft feeding instituted as space between the jaws will permit.

CASE 1 J. D., age 3 years. As the result of a fall three months ago, there was an ununited fracture of the lower jaw at the position of the second incisor and canine tooth, right, which were lost.

When brought to my attention the patient showed a sinus discharging externally from the seat of fracture. There had been an attempt to fix the fracture by wiring the fragments, which attempt had failed. There was poor occlusion of the teeth and consequent distortion of the face.

The wire was removed and sinus healed, following which a three-sixteenths inch bone pin graft removed from the patient's tibia was imbedded by the writer's previously described technique, securely fixing the jaw fragments. The patient left the hospital in 12 weeks, with firm union of fragments and good dental occlusion.

CASE 2 A. N., age 19 years Ununited fracture lower

other parts of the body, two in the right leg, one in the right hip and one in subclavicular space with exit through the axilla. He was taken prisoner and the bullet in the hip removed in a German hospital. Three months later he arrived in an Allied hospital where his jaw was operated upon with improved function.

When the patient was brought to my attention the

bone substance and also four teeth with displacement upward of posterior fragment marked loss of dental occlusion and of symmetry of facial contour.

the bone implant was made shows graft in good position. Eight months later union was firm.

AMERICAN COLLEGE OF SURGEONS

ORGANIZATION OF STATE AND PROVINCIAL CLINICAL SECTIONS

MONTANA, IDAHO, OREGON, AND WASHINGTON LEAD IN HOLDING FIRST STATE MEETINGS

STATE sectional meetings of the Clinical Congress of the American College of Surgeons have been definitely arranged as follows.

Montana—Butte, September 3 and 4

Idaho—Boise, September 6 and 7

Oregon—Portland, September 10 and 11.

Washington—Seattle, September 13, 14 and 15

By co-operation with the central office of the College, these four meetings have been planned as a series which will make it convenient for those in attendance from outside of the state to visit all of them in succession.

In each of these states morning and afternoon clinics have been arranged by the Fellows of the College in the cities in which the meetings are to be held. A large afternoon meeting for prominent lay men and women of the respective cities and states and a series of evening literary sessions to consider scientific surgical subjects have been announced.

Besides the local talent that will be called upon to entertain at the various meetings, Dr William D Haggard, Nashville, Professor of Surgery of Vanderbilt University and a Regent of the College, and Dr Frederic A. Besley, Chicago,

Professor of Surgery of Northwestern University, have accepted invitations and will deliver addresses at the afternoon meeting for citizens. They will also deliver addresses on live surgical subjects at an evening meeting in each state. The Director of the College will be present at these various meetings and at one session in each state he will deliver a talk on the work of the College in connection with the standardization of hospitals, and point out how the state

organization work of the different state sections, and the future work of the College that can be aid

Co will be represented at each of the meetings by Mr. T E. Allen and Mr. R U. Myers. This will insure close co-operation between the central office and the executive committees of the states in the conduct of these meetings, and will aid greatly in carrying out the many details so important to the success of any scientific meeting.

STATE CLINICAL SECTIONS ALREADY ORGANIZED

During the month of July State Sections of the Clinical Congress of the American College of Surgeons were formally organized in Iowa, Minnesota, North Dakota, South Dakota, and Nebraska.

The Executive Committees and State Representatives of these States are as follows:

IOWA

EXECUTIVE COMMITTEE

Chairman, W W Pearson, Des Moines

Secretary, J C Rockafellow, Des Moines

Counselor, Donald Macrae, Jr, Council Bluffs

Term expiring 1921

Senatorial, W. W. Pearson, Des Moines

1st District, Charles P. Frantz, Burlington

3rd " William B. Small, Waterloo

5th " Aram G. Hejman, Anamosa

7th " Francis E. V. Shore, Des Moines

9th " Donald Macrae, Jr, Council Bluffs

11th " William Jepson, Sioux City

MINNESOTA



Fig. 3. Main portion of the apparatus.

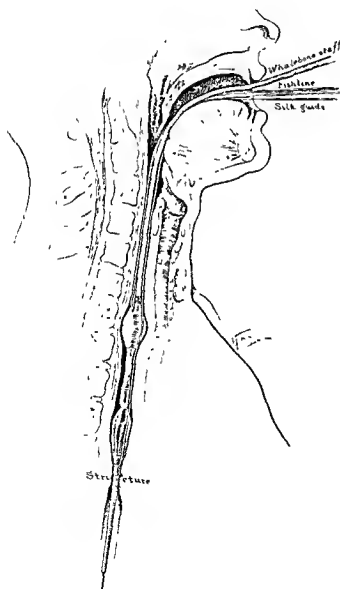


Fig. 4. The apparatus just before passing the distal olive through the stricture.

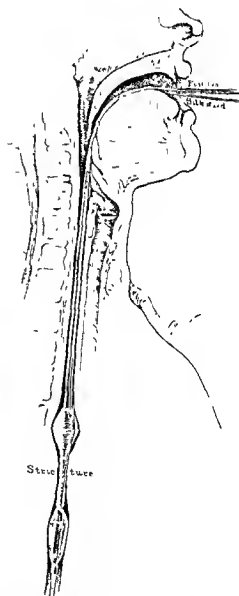


Fig. 5. The apparatus in place. The whalebone staff has been withdrawn.

executive committee and of the state representatives and be the president of the annual session of the clinical section. The secretary shall act also as secretary of the state representatives and of the state section. In the event of the death, resignation, or withdrawal from the state of the chairman, a counselor, to be known as the vice-chairman, shall assume the duties of the chairman until that office is filled by election at the next meeting of the state representatives.

The duties of the executive committee shall be those ordinarily performed by a governing board, namely

1. To conduct annual state clinical meetings as hereinafter provided,

2. To create, appoint, and direct all committees,

3. To direct the manner in which the books and accounts of the section shall be kept, and cause to be examined from time to time its accounts and vouchers for moneys received and paid out, and submit the same to the central office for approval,

4. To keep a record of state proceedings, and submit a report regarding such proceedings to the state representatives for approval at the next succeeding meeting, and to the central office.

The executive committee shall hold meetings at such time and place as it may from time to time determine.

ANNUAL SESSIONS

State sections when organized shall proceed with plans for the first annual session of from two to three days at such time and place as may be determined upon by the executive committee, which may include:

1. Surgical and diagnostic clinics and clinical demonstrations to be conducted during the morning by Fellows of the College, and by their associates, of the city in which the meeting is held. These clinics may provide practical demonstration of the group method of diagnosis and teach-

art and science of surgery, to be presented at evening meetings by local surgeons of prominence and by invited guests from outside the state or province;

4. Annual meeting of the state section, of the state representatives, and of the executive committee

COMMITTEE ON INVITATIONS

The committee on invitations should represent all parts of the state in order that no medical man of prominence will be omitted from the invitation list. This committee shall determine the number of invited guests, based on the following:

Attendance at the clinical sessions shall be limited to Fellows of the College and invited guests, the latter to include candidates for Fellowship, approved ethically by the respective State Credentials Committee, and include also internists, pathologists, roentgenologists, editors of medical journals, and other medical men of influence. Invitations to attend the afternoon meetings shall be extended to the Chamber of Commerce, the members of the Rotary Club and their wives, the Women's Club, and other prominent lay organizations and individuals.

COMMITTEE ON ARRANGEMENTS

The committee on arrangements, composed of local Fellows, shall visit the hospitals of the city

for the number of men who will attend.

This committee shall reserve accommodations in the best hotels in the city far enough in ad-

provide:

1. A ballroom or assembly hall for afternoon and

ticket bureau,

3. Corridor to be used for the display of clinical bulletins.

Note. It is desirable that all of these rooms be on the same floor. In case the hotel cannot provide a large assembly room, a suitable auditorium in the city should be secured for afternoon and evening meetings.

The committee on arrangements shall appoint a capable person to act under its direction as editor of the daily clinical bulletin and provide a stenographer familiar with medical terms to receive reports of the coming day's clinics for this bulletin.

HOSPITALS

Each hospital in which clinics are to be given shall appoint a committee of three, representing all services, which shall be responsible for the conduct of the clinics held in that hospital. One member of this committee shall be specifically

THE TREATMENT WITH RADIUM OF CANCER OF THE BLADDER

WITH REPORT OF A CASE

BY HOWARD A. KELLY, M.D., F.A.C.S., AND ROBERT M. LEWIS, M.D., BALTIMORE

IT is but a short time since a patient suffering with hæmaturia rested in the hands of the general practitioner or internist, attributing such remissions as she might enjoy to the medicine she chanced to be taking. Great stress was laid on the importance of examining the urine to determine the source of the bleeding. If the blood was bright red, the lower tract was responsible, while if the blood was intimately mixed with the urine, or if ureteral clot casts appeared, the kidneys or ureters were held guilty, and appropriate medication was prescribed. Now, however, for two decades cystoscopy and the ability to examine the ureters and kidneys has, let us give thanks as we declare it, entirely altered not only all former methods of diagnosis but of treatment as well, and treatments have become direct, purposeful, and aggressive.

Of the various causes of blood in the urine, a bladder tumor is the commonest. In the older days there was no treatment for this condition, but with the modern development of surgery, running *pari passu* with diagnosis, it has been found possible to resect the bladder with the tumor in occasional suitable cases, and fairly good results have been secured. For three reasons, however, radical excision can not always be the method of choice, the operation may be impossible on account of the site and extension of the growth. The operation is often formidable

Beer's attack upon bladder tumors with high frequency current was epoch-making. It has the great advantage of being nearly free from risk, and frequently yields brilliant results when applied to benign papillomatous growths. It is regrettable that high frequency has not also helped us as we at first fondly hoped, in attacking malignant tumors as well. In a large percentage of these cases the growth is found on the trigonum, which also prohibits any attempt at removal, as experience shows that recurrence is well-nigh universal.

In radium, however, our experience has shown that we have an effective means of treating at least some of these malignant growths of the bladder.

Let us describe the method and cite a case in point. The simplest plan consists in a direct application of the tube containing the radium or emanation to the tumor. This is most easily and satisfactorily accomplished in the case of a woman through the Kelly cystoscope. With the patient in the knee-chest posture and an air-distended bladder, one can see the growth as easily as the uvula in the mouth, and can also just as easily apply the radium on the end of a sound close against the tumor. In this way we have treated a number of cases of vesical carcinoma with some excellent results.

As a rule the emanation equivalent of a gram of radium is used, and the treatment is given for from three to ten or more minutes. Vesical irritation is not noted unless the applications are made directly to the infiltrated vesical wall. Such treatments can be given from one to four times in a fortnight. Raised papillary malignant tumors of the bladder can also be handled by direct applications of radium on the surface, with a good chance of getting a satisfactory permanent result.

As a rule the application of radium checks the bleeding promptly; if it fails, a superficial fulguration of the oozing area ends it.

The infiltrative type of bladder cancer is confessedly harder to handle, and its treatment calls for unusual judgment and nicety in methods of attack. In a woman with a trigonal involvement, the infiltration is often felt and outlined through the vaginal wall, and here we can easily establish cross-fire treatment, increasing greatly the direct radiation of the diseased area and avoiding irritation of the bladder mucosa. The application of a gram of radium at one-fourth or one-half inch distance from the vaginal wall for from one-half hour to 2 hours, in addition to the intravesical treatment, would constitute an average radiation. This can be repeated in from 4 to 6 weeks. If the amount of radium used is less, the duration of the treatment should be correspondingly longer.

Finally, we have a third useful means of radiation at our disposal. Instead of applying radium or emanation over the bladder or vaginal side of a growth, one can implant a capillary glass tube containing emanation directly in it. For

HOSPITAL STANDARDIZATION IN CANADA

THE following paper, addressed to the Canadian Medical Association in session at Vancouver, June 22-26, and written by Dr. M. T. MacEachern, President of the British Columbia Hospital Association, is of interest.

Foreword: The vital question confronting the hospitals of Canada today is that of hospital standardization. The subject is just as vital to the medical profession. This résumé sets forth briefly the nature of the work, what has been done, and what remains to be done. It is presented in the hope that both the hospitals and the profession will join more earnestly in that sort of constructive action which will create Class A hospitals throughout Canada.

If the medical profession is to advance scientifically and otherwise, and to retain the confidence of the public, it must create hospitals which protect our right to be well. It must create hospitals wherein every man, woman, and child admitted receives the best care possible for the profession to give. After years of study, both the hospitals and the profession have agreed upon the most direct and practicable route to that ideal. The route is known as the minimum standard of the American College of Surgeons. There is nothing new about it, and there is nothing debatable about it. The thing needed is merely swifter action springing out of the deepest seriousness of the profession, in order that the ideal come true.

In any community an intimate relation must exist between the hospital and the profession. To standardize one is to standardize both; and

of patients.

The patient is the unit of consideration and the bond between the hospital and the doctor. If this is true, then the motto of both must be *one hundred per cent efficiency in the care of all patients*. Rich and poor, without regard to color or creed, come within this conception. Is there any nation in the world which can outdo the profession in Canada in this respect?

from the whole picture of Canadian hospitals. Many in the picture came recently into existence.

They "grew over night," and in some instances have little or no knowledge of the true ideal for which hospitals are intended. Many are badly planned, inadequately equipped, and inefficiently personelled. Many are poorly financed, depending for their existence as the alms seeker does on the streets. Many, with good intentions enough, are merely boarding houses for sick people. Such institutions say with a sort of pathetic sentimentality: "We take splendid care of all our patients." But they have not the facts on which to base such a claim.

A real hospital *knows* what kind of care its patients receive, it *knows* that when mistakes occur they do not occur again through avoidable reasons. The time has come when any hospital in Canada must either be in possession of such procedure or resign all right to the confidence, goodwill, and support of the public.

We do not have too many hospitals. We do not have enough hospitals. Our business, then, is not destructive. Our business is to accept the facts as they are and then, with all the combined common sense which we possess, to change the poor or mediocre facts into ones of excellence. That process is hospital standardization.

For seven years, silently but energetically and effectively, hospital standardization has been developing until it now permeates almost every institution on our continent and is making its influence felt because it is recognized as a simple, practical, and rational basis for the best work and in the best interests of the doctor, the patient, the American people, and the community.

In briefly reviewing the progress of this movement we find it started in 1913 and for the first two or three years data were secured by correspondence, by visits, and by personal contact with hospitals, doctors, boards of trustees, and others. This information was very carefully digested by the group making the study and after due deliberation the minimum standard requirement was formulated. This standard is as follows:

TRANSACTIONS OF SOCIETIES

CHICAGO SURGICAL SOCIETY

REGULAR MEETING HELD FEBRUARY 6, 1920. DR. CHARLES F. KAILKE, PRESIDING

ACTINOMYCOSIS OF THE LOWER LIP

DR. JOHN R. HARGER: This man is 53 years of age, and came under my observation a few months ago. He gave a history of having been on a farm for 3 or 4 weeks last August, visiting his son. Pre-

viously it was not painful, but a little tender to touch. Eventually, however, it annoyed him because it reached a size sufficiently large to project a little. Examination showed the mass to be about the diameter of a quarter. It was not attached to the mucous membrane nor skin; it was not circumscribed, it was slightly tender, it did not fluctuate, and did not seem to be quite hard enough to be malignant. As it was not attached to the mucous membrane or skin, I did not think it was malignant, but thought it might be inflammatory in character. I advised him to have a little of the mass removed for section. I removed a piece and found distinct signs of inflammatory action. It was not circumscribed and manipulation caused a whitish, purulent material to escape. I did not remove a V-shaped piece of the lip because I did not think it was malignant, but I did remove a small amount of mucous membrane to provide for a better closure of the wound. Microscopic section showed the ray fungus. The man apparently had contracted the infection during his short stay on the farm.

I have brought this man here for two reasons: First of all, because of the rare condition, and because I am seeking information. So far as I can ascertain, treatment in such cases is not satisfactory. I believe that if this infection should recur I would advise the patient to have a complete resection of the lip. At the present time there is no evidence of recurrence and only a small scar on the lip is seen. I would like to inquire if any of the members have had experience in treating cases of actinomycosis with radium or X-ray.

DR. PREMISTER: Has the patient been given any iodide of potash?

DR. HARGER: Yes, but he has not been very faithful in returning. When he came back the first time he showed no evidence of a recurrence, and I have not pushed the iodide of potash.

DR. A. J. OCHSNER: Some twenty years ago we learned through Professor Bollinger who had been

a veterinary surgeon that if we treat cases of actinomycosis exactly as the disease is treated in cows, the patients will recover just as regularly. If patients with actinomycosis are given enormous doses of iodide of potassium, say 90 grains at each

be done for four days, then omitted for a week, and then repeated again until there has been no sign of the disease for at least one month. These cases will get well in our experience if this plan is carried out. Small doses of potassium iodide do no good.

We had two cases of actinomycosis last week, one abdominal and one of the neck, and they are responding to this treatment very promptly.

It is important to repeat this treatment once or twice a month after the patient has apparently completely recovered, in order to destroy any stray points of infection which may not have been reached during the primary treatment.

In two cases in which this after-treatment was neglected we had recurrence because there was evidently an abscess which contained the ray fungus or its spores at a point to which the blood stream had not carried the potassium iodide.

DR. KELLOGG SPEED read a paper entitled, "Carcinoma of the Pancreas."

OSTEOMYELITIS

DR. A. J. OCHSNER read a paper on osteomyelitis (See p 263.)

DISCUSSION

DR. CARL BECK: There are very few surgeons who have had the experience of Dr. Ochsner in regard to acute osteomyelitis. I have had comparatively little experience with cases of acute osteomyelitis, but I have studied very carefully the subject of chronic osteomyelitis.

In the history of osteomyelitis Celsus has a very interesting chapter on this subject. He speaks of a swelling appearing on the lower portion of the leg, and says that the swelling festers. He takes his probe, goes in and finds rough bone and says that bone is diseased and dead, and a hot iron must be inserted in the cavity and the tissue burned until

province to promote the welfare of our institutions, and they also recommended that the Canadian Hospital Association, which has been inert for the past few years, be revived. Through such organizations it is hoped to assist in the promotion of hospital standardization. The work of the Province of British Columbia has been taken care of by Dr. T. R. Ponton, assistant superintendent and director of medical records of The Vancouver General Hospital, and myself, and all the hospitals of fifty beds and over have been reviewed. Our work has recently been extended to the four western provinces and a review will be made in the course of the summer. It is indeed gratifying to find that this work is

being welcomed by the hospital people and the medical profession wherever we go, and we trust that before long we will not have any institution in western Canada which cannot claim the distinction of "Class A."

In conclusion let me say that the doctors in Canada are of such character and training that they will carry this program out, but let me appeal to you, with all the force in me, for speed of action. Let us have Canada in the lead, which means that there shall be a series of hospitals from the Pacific to the Atlantic in which every patient gets the best service always, which the profession can give. Let us have in Canada the first such series of hospitals across the continent.

most important part of the modern treatment of chronic osteomyelitis.

The reason the Mosetig-Moorhof spermaceti plug has failed so often in the hands of those who have used it is because it is almost impossible to stop the bleeding in the thick shaft of the bone which we have exposed. I have tried it very often and have never yet been able to stop the bleeding, completely, and if you put in a Mosetig-Moorhof plug and allow bleeding to take place underneath, there is always a failure. It is impossible, as Dr Beck says, for us to clean out all the infective foci in the shaft of the bone, you can nearly do it, and you think you do it by chemicals or heat, and yet the various methods of filling bone cavities at the time of operation with spermacetic compounds, or paraffin, or petroleum compounds, almost always fail. We had a good many cases at Fort Sheridan operated on by various men. A series of cavities

a blood clot, after it has once clotted, has very little resistance. It does not resist infection, while living muscle will resist infection to quite a marked extent. If we simply put skin into these deep cavities, as in the tibia, the result is an adherent scar. The skin is apt to be so adherent as to cause the patient inconvenience. I think however, filling up the cavity with skin is much better than not filling it at all.

I am not optimistic about the old cases of osteomyelitis of the femur because I have seen some that had been operated on many years ago by some of our most distinguished surgeons. These cases are still discharging and still need proper craterization, but a man rather hesitates to take out half of an osteomyelitic femur, which is what should be done to cure the case. You dislike to do it and you content yourself by taking out a narrow canal of bone which does not work. If you have an osteomyelitic femur you may as well take a motor saw and split the femur in half, all the way up, and leave only a shallow canal for the other half of the bone. These cases will usually then get well if you drain them properly for a long time.

DR. JOHN R. HARGER: I would like to say a word or two regarding Dr. Ochsner's explanation of recurrence in chronic cases of osteomyelitis. I have had several cases of chronic osteomyelitis in the past year that have extended over a period of from 10 to 25 years. Dr. Ochsner offered the explanation that these recurrences were probably due to foci of infection in the teeth or tonsils. It seems to me they were more likely due to latent foci of infection in the bone. In chronic osteomyelitis the shaft of the bone is increased in density; the blood supply is much more limited than in normal bone, and the chances for infected emboli to enter has very much decreased. However, should they enter, the bone would likely be more susceptible to infection.

In closing these cavities, I have found invariably that if the cavity is reduced to a surface and filled

up in some way with soft living tissue, whether muscle, fascia, or skin, it will close.

Recently I had a case which extended over a period of 21 years, with an acute exacerbation in the end of the tibia, so dangerously near the knee-joint that I felt very much afraid it would enter the joint. It was located back of the tuberosity so near the joint I could not reduce the cavity to a surface. I took a portion of the fascia, muscle, and

This was done 3 months ago, and the cavity is still closed.

DR. COLEMAN G. BUFORD: Some years ago I had a subperiosteal resection for osteomyelitis in which regeneration was incomplete near the middle of the shaft and it was necessary to put in a bone graft to fill the gap. The tibia which had thus far regenerated, was weak and thin and after the insertion of the bone graft, was unfit for full weight bearing, but after a little use, bone hypertrophy rapidly took place and the shaft became much larger and useful. There was almost no subsequent longitudinal growth of this regenerated diaphysis, but the fibula grew and its head became displaced upward, giving the appearance of an angulated bow leg. I found that I could repair this deformity in part, by cutting the tibia transversely, making traction, thus bringing down the head of the fibula and elongating the tibia and straightening the leg. A bone graft was inserted in the tibial gap; I thought that this would have to be repeated from time to time until full growth was established. As far as our work went, this case was a success, but we finally lost track of the patient.

I quite agree with the remarks of Dr. Beck, and while I have tried everything suggested to fill the craters, covering a period of 25 years, I have failed many times to obtain permanent healing, but began to have very much better success after I learned either to remove the diaphysis in cases where the bony shaft was almost or wholly damaged beyond fair prospects of repair or to reduce the cavity to a surface, the plan suggested by Dehelly who addressed us several months ago. In such extensive cases of osteomyelitis of the shaft, three planes are removed by the chisel or circular saw. The soft parts fall in and regeneration begins. Last July I operated upon a boy who had been suffering from diffused osteomyelitis of the shaft of the tibia for many months. I did the operation I mentioned, leaving the posterior plane of the tibia only, and was much surprised at the rapidity with which repair took place. In a comparatively short time a new tibia had regenerated, almost perfect in shape and size.

Dr. Ochsner has given us a very valuable lesson in osteomyelitis in connection with the matter of splitting the periosteum. When he first called my attention to it a good many years ago, I looked upon the method with some misgivings, but later a

books, entirely written in his own hand, are also preserved there

The ancient building of the original Hotel Dieu has been replaced by a large building of stone construction, with a capacity for 225 beds, erected on another site in the year 1861, and that of the Montreal General Hospital has been greatly enlarged by repeated new additions, and both have been reconstructed and completely transformed to meet the requirements of modern scientific medicine.

To these have been added, in more recent years, the spacious halls and splendidly equipped buildings of the Royal Victoria Hospital erected through private benefaction in the year 1893, with a present capacity (including that of its Ross Memorial Annex for private patients, opened in 1916) of 450 beds, the Notre Dame General Hospital, with 156 beds, erected in 1880, situated not far from the site of the old Hotel Dieu and serving the lower (southern) part of the city, the Western General Hospital, capacity of 100 beds, founded in 1874, which has made rapid advances in recent years and has just

erected a new nurses' home at a cost of \$200,000, which will be open for inspection at the time of the meeting of the Congress in October; the Catholic Maternity Hospital, with 175 beds, opened in 1845, and the Montreal Maternity Hospital, with 80 beds, also of old foundation but not incorporated until 1874, both doing a very active city service, the Montreal Foundling and Baby Hospital, with 80 beds, founded in 1891; the Children's Memorial Hospital founded in 1902, with 100 beds, the beautifully organized

in 1906, with a capacity of 160 beds; and the Hôpital St Paul. Together, these buildings form a splendid record of the march of progress, and an apt illustration of the truth that fidelity in the day of small things yields certain harvest, and that the foundations laid in the past by disinterested enthusiasm, integrity, sagacity, and exact knowl-

GENERAL PLANS FOR THE MONTREAL MEETING

IN the following pages is presented a preliminary program for the several evening meetings at Montreal as arranged by the Executive Committee of the Clinical Congress. The tenth annual session formally opens with the Presidential Meeting on Monday evening in St. James Methodist Church, situated on St. Catherine Street a few blocks from headquarters at the Hotel Windsor. The meetings on Tuesday, Wednesday, and Thursday evenings will be held in the ballroom of the hotel. On Friday evening occurs the eighth convocation of the American College of Surgeons to be held in St. James Methodist Church, at which time fellowship in the College

tions that will fully represent the clinical activities of that city is being prepared. All departments of surgery will be represented, including gynecology, obstetrics, urology, orthopedics, surgery of the eye, ear, nose, throat, and mouth, roentgenology, experimental surgery, surgical pathology, etc. In the following pages is published a preliminary outline of such clinics and demonstrations, which schedule is tentative and is to be revised and amplified. The real program of the

on the following day.

LIMITED ATTENDANCE—HOTEL ACCOMMODATIONS

Because of limited hotel facilities in Montreal, it has been found necessary to place the matter of reserving hotel accommodations for the visiting surgeons in the hands of a committee, and applications for accommodations should be made to Dr. Alfred T. Bazin, Chairman of the Committee on Hotels, 836 University Street, Montreal. This committee will undertake to provide accommodations only for those who have registered in advance at the office of the Clinical Congress in Chicago. In addition to the Windsor,

guests of the Congr. ss.

Following the general plan of previous sessions

strations in the hospitals and medical schools. Under the supervision of the Montreal Committee on Arrangements, with Dr. George E. Armstrong as Chairman, a program of clinics and demonstra-

Ryerson, of using a flap, if necessary. In three such cases we had sudden death, so that since that time we have not used zinc chloride solution unless a constrictor was used above the seat of the disease. As I have said, we had three sudden deaths and there were also three at Atlanta, during Dr. Babcock's absence. He reported at a meeting of the American Medical Association, as you may remember, 68 cases that were successfully treated, and there have been a few instances in which the wound did not close, although the patients were almost ready to be discharged. We had a similar experience in General Hospital No. 47. With the exception of the three deaths in our 50 cases, healing occurred inside of 6 weeks.

At Fort Sheridan I have been trying out the method of injecting with 14 per cent zinc chloride solution and then staining with methylene blue solution. I had the contents of the cavity sent to the laboratory in several cases to see if it was sterilized, and a report was sent to us stating that this material was not sterile. We found, however, every one of the them showed cultures, so that while I believe the method has some virtue, still it must not be depended upon absolutely.

We also had a series of three cases with good results from the use of chemical sterilization by 5 per cent carbolic acid in alcohol. The cavities closed up entirely. In one case of osteomyelitis of the shoulder in which nothing was used, the cavity closed up immediately. After all, the whole question simmers down to efficient removal of bone, and good clean surgery.

DR. OCHSNER (closing): Dr. Kerr's discussion is

element of danger Dr. Kerr has mentioned must be considered

Dr. Davis has drawn our attention to the treatment of this condition in children. It is surprising how bad osteomyelitis may appear in a child, and yet how perfectly healing will take place by simply making an incision through the periosteum, being sure to split the periosteum much farther than seems necessary. In young children, no matter how large a portion of bone is removed, this may be restored without much deformity, although the infection may have been extensive to begin with. It is true that in some children the dead shaft of the bone can be safely removed early if care is used not to scrape the bone producing the layer of the periosteum. According to our observation the new bone obtained after removing the entire shaft early cannot be compared with the bone that is produced when simple

drainage is used and the formation of an involucrum awaited. Even with a lot of trouble, not nearly so good a result is secured as in the other way. All seriously sick patients I would treat by simply making a very long incision down through the periosteum and loosening the latter on each side for a distance of 1 centimeter. When there is oozing of pus in acute cases, as mentioned by Dr. Vaughan, nature has established very good drainage, provided the periosteum is split freely, that is, the pus is forced out from the haversian canals underneath the periosteum, and there it is held. If the periosteum is opened the pus is no longer held under tension, and by using boric acid and alcohol dressings and establishing drainage outward, the amount of destruction will be relatively small.

In operating for the relief of chronic osteomyelitis, the limit of the infected tissue must be reached. In acute osteomyelitis it is sufficient to establish drainage by splitting and reflecting the periosteum. When a circumscribed area of infection is located in the medullary cavity without much traumatism, a favorable condition for recovery is established by simply opening this with a very sharp chisel or a trephine and what needs to be done later on, when it becomes a chronic case is very simple.

In regard to being able to disinfect the canal in chronic osteomyelitis, I would say that after having removed all the sequestra, and having smoothed the surface on the inside, and having cut away enough of the involucrum so that the sides can be folded in without pressure, I do not believe that it is really important that disinfection should be perfect, although every effort should be made to accomplish as nearly perfect disinfection as possible.

Dr. Ryerson spoke about a continuation of bleeding. Bleeding can be stopped by elevating the limb and waiting patiently, but this is not necessary, provided the method I have described is followed. In finishing the operation we are sure to cut away enough bone so that the skin comes together without the slightest tension. We put the patient to bed with the extremity elevated and use large cushions in the dressings in order to secure perfect immobilization. Dr. Schede used cushions of moss, very thick, on all sides and incorporates his splints in these cushions so that any little shock would not

same experience with the few cases in which we used Moorhof's plug. They must be undisturbed until the blood clot is changed into connective tissue, so that any additional hemorrhage is prevented.

Clinic tickets will be issued at headquarters each morning at 8 o'clock for the clinics and demonstrations to be given that day, a complete schedule of the day's clinics having been posted on the bulletin boards at headquarters on the afternoon of the preceding day. After the program has been posted, reservations for clinic tickets for the next day's clinics may be filed the

nouncements of the evening session, business meetings, etc

REGISTRATION FEE

A registration fee is required of each surgeon attending the annual clinical meeting, the receipts from registration fees providing the funds with

which to meet the expenses of preparing for and conducting such meetings, so that no financial burden is imposed upon the members of the profession in the city entertaining the Congress.

A formal receipt for the registration fee is issued to each surgeon registering in advance, which receipt is to be exchanged for a general admission card at headquarters upon his arrival in Montreal. This card, which is non-transferable, must be presented to secure clinic tickets and admission to the evening meetings. Headquarters at the Windsor Hotel will be open for registration on Monday, October 11. The clinical program for Tuesday will be bulletined at headquarters on Monday afternoon, and tickets for Tuesday's clinics will be issued as visiting surgeons register.

PRELIMINARY CLINICAL PROGRAM

ROYAL VICTORIA HOSPITAL

Tuesday, October 12

- A. E. GARROW—9 00 Surgical operations
W. W. CHIPMAN—9 00 Gynecological operations
C. B. KEENAN—9 00 Cases of cranioplasty, spinal cord injuries in soldiers, chylous effusion in pleura
E. W. ARCHIBALD—9 00 Demonstration of X-ray plates of thoracoplasty for pulmonary tuberculosis, speci-

Wednesday, October 13

- G. E. ARMSTRONG—9 00 Surgical operations
D. W. MACKENZIE—9 00 Urological operations
F. A. C. SCRIMGER—9 00 Demonstration six cases of penetrating defects in long bones, infected, filled with pedicled muscle flaps, five cases of massive collapse of lung, series of amputations and results, obstruction of duodenum
F. T. TOOMEY and DR. FRIE—9 00 Clinical and patho-

logical demonstration of cases of tuberculosis of the lung, series of amputations and results, obstruction of duodenum

J. W. DUNCAN—9 00 Demonstration of induction of labor
J. R. FRASER—9 00 Gynecological operations

cases
Ear, nose, and throat clinic—3 00 Operations on septum and accessory sinuses

Thursday, October 14

- E. W. ARCHIBALD—9 00 Surgical operations
W. W. CHIPMAN—9 00 Gynecological operations
C. B. KEENAN—9 00 Demonstration of late results of foreign bodies in the lungs

W. C. TURNER—9 00 Surgical operations

J. A. LITTLE—9 00 Normal labor casts

F. A. C. SCRIMGER—2 00 Surgical operations
W. G. TURNER and W. J. PATTERSON—2 00 Orthopedic operations

Ear, nose, and throat clinic—3 00 Mastoid operations

Friday, October 15

C. F. LITTLE—9 00 Normal labor casts
D. W. MACKENZIE—9 00 Urological operations
W. C. TURNER—9 00 Surgical operations

fractures
J. W. SHIRLING and W. G. M. BYERS—9 00 Corneo-scleral trephining.

F. E. MCKENTY—2 00 Surgical operations.
J. R. FRASER—2 00 Gynecological operations.

MONTREAL MATERNITY HOSPITAL

Mornings

W. W. CHIPMAN—Gynecological and obstetrical operations

H. M. LITTLE—Normal labor casts.

W. A. G. BAULD—Demonstration of ordinary obstetrical routine

H. C. BURGESS—Demonstration of the application of forceps

J. W. DUNCAN—Demonstration of induction of labor

J. R. FRASER—Intrapartum gynecology

Afternoons

H. M. LITTLE—Technique of obstetrical operations for hospital and general practice

J. W. DUNCAN—Routine treatment of vomiting of pregnancy.

H. C. BURGESS—Routine treatment of eclampsia.

J. R. FRASER—Prenatal clinic

Clinical evidence substantiates the experimental indication that the operation does not do what is claimed for it, for many cases followed at the Polhemus Memorial Clinic, even after long-continued, postoperative, local treatment, continue to have symptoms referable only to the continued presence of chronic endocervicitis and the accompanying cellular-tissue inflammation.

That the tendency toward cure of chronic endocervicitis is directly proportional to the approach to an amputation, will, I believe, be attested to by many gynecologists, which in itself is further evidence of the inability to remove all infected material by coning out the endocervical mucosa.

If the rationale for the removal of the cone-shaped wedge as advocated, is the desire to conform to the surgical principle of establishing drainage to eliminate the more deeply situated infection, then that end is defeated by relining what would be the draining surface with the vaginal cuff.

Therefore, since chronic endocervicitis is primarily a condition of infection of the normally deeply-seated terminal tufts of the cervical glands since the glands can and do push deeply into the surrounding structures as a result of such infection, since it is not possible to determine macroscopically the point of termination of such penetration, since there is reason to believe that the limit of possibility of such penetration is not materially lessened as the internal os is approached, since it is not always possible to remove all the infected material without

because in some the muscle-layer, arterial has been

demonstrated as remaining after the operation, and in view of the fact that follow-up clinical evidence shows a continuance of symptoms after operation, we must cease to expect cures from the operation of tracheloplasty and must seek anew for a cure for chronic endocervicitis

H. KOSTER

I KOKIAN, N Y

BROKEN NECK (?)

To the Editor: In 1889 I was called to see Mrs. A., a primipara in the thirties, small pelvis, labor apparently normal but slow. In due time the forceps were applied, but delivery was slow and difficult. The child's head was in no way injured but the axis and atlas were separated and the child born dead. There were no signs of life after delivery.

1892. Mrs. R., young, second labor, breech presentation and child abnormally large as were all her children. Delivery was difficult and prolonged, and the axis and atlas were separated. There was no signs of life after delivery.

In 1896, I was called to see a child which had been delivered by a midwife a few hours previously. I diagnosed broken neck (separated axis and atlas). The child died in a few hours.

1906. Mrs. — primipara, prolonged labor as the child was large. Forceps used, child delivered, skin macerated, showing child had been dead several days. The axis and atlas were widely separated owing to the severe and continuous pull, showing that even a dead child may be delivered with a broken neck.

July, 1910. Mrs. C., a minister's wife, primipara in the thirties, formerly an assistant school principal. In labor 3 days, dilatation of the cervix very slow with nothing suggesting interference. Right occipitoposterior position. Consultation called. The consultant administered an anesthetic, forceps were applied (high operation) by the attending physician, and the head was easily brought to the vulva, when the consultant was asked to relieve the operator. He prosecuted the further operation vigorously by sweeping side to side motions instead of direct tension. The child showed signs of life

but lived only 25 minutes, although every effort was made by us to save it. The axis and atlas were separated.

1911. Mrs. C, multipara, breech presentation, labor easy, but not without some anxiety about the delivery of the head, but a living child was born. It was weak, never able to hold up its head, always dropping in the direction of gravity, having very little power even while nursing. It developed a pneumonia at the end of two weeks and survived but two days with a most completely solidified right lung. There was a slight separation of the axis and atlas.

1912. Mrs., a multipara, had been in labor since early morning. I was called in consultation at 7 p. m. and found a malposition and dead child. I administered an anesthetic and the attending physician converted it into a breech position and with much difficulty it was delivered with a separated axis and atlas.

September, 1914. Mrs. L., a primipara, breech presentation, child large to the extreme, very tedious labor. The child was born and a widely-separated axis and atlas was very easily demonstrated to the consultant.

To diagnose the separation most easily, let the head drop severely forward with the chin on the chest. There is then a depression between the spinous processes of the two bones sufficient to admit the

We often see the statement from the profession that it is not uncommon for a child to die of apoplexy during delivery and possibly much oftener than the

PRELIMINARY PROGRAM OF EVENING SESSIONS

Presidential Meeting, Monday, October 11

Address of Welcome: GENERAL SIR ARTHUR WILLIAM CURRIE G.C.M.G., K.C.B., LL.D., Montreal
 M.D., Rochester, Minn.
 M.D., Montreal
 MOYNIHAN, Leeds; SIR WILLIAM TAYLOR, C.B., Dublin,

RIGHT HONORABLE SIR AUCKLAND GEDDES British Ambassador to the United States
 SIR BERKLEY MOYNIHAN, C.B., M.S.F.R.C.S., Leeds. The John B. Murphy Oration on Surgery.

Tuesday, October 12

SYMPOSIUM Intestinal Obstruction

J. M. T. FINNEY, M.D., Baltimore Acute Intestinal Obstruction
 HARVEY B. STONE, M.D., Baltimore The Toxic Agents Developed in the Course of Acute Intestinal
 Obstruction and Their Action
 LE GRAND GUTTRY, M.D., Columbia The Pre-operative Treatment of Intestinal Obstruction
 RUDOLPH MATAS, M.D., New Orleans The Treatment of Postoperative Ileus with Special Refer-
 ence to Tympanites as a Defensive Phenomenon
 JOHN E. SUMMERS, M.D., Omaha Enterostomy in the Treatment of Acute Intestinal Obstruction
 CHARLES H. PECK, M.D., New York Obstruction of the Colon and Ileocolic Junction

SYMPOSIUM Blood Transfusion

NELSON M. PERCY, M.D., Chicago Blood Transfusion in Chronic Anæmias
 LILIAN K. P. FARRAR, M.D., New York Acidosis in Operative Surgery and Its Treatment by Glucose
 and Gum Acacia Given Intravenously
 DISCUSSION L. BRUCE ROBERTSON, M.D., Toronto, JOSEPH ERLANGER, M.D., St. Louis

Wednesday, October 13

CLARENCE L. STARR, M.D., Toronto Reconstruction Surgery and Its Application to Civilian Practice.
 Discussion: JOEL E. GOLDTHWAIT, M.D., Boston, NATHANIEL ALLISON, M.D., St. Louis

SYMPOSIUM Cancer of the Uterus

WILLIAM P. GRAVES, M.D., Boston Present Status of the Treatment of Operable Cancer of the
 Cervix Uteri
 WILLIAM S. STONE, M.D., New York The Present Position of Radium in the Study and Treatment
 of Uterine Cancer
 DISCUSSION ROBERT B. GRELING, M.D., Boston, HOWARD CANNING TAYLOR, M.D., New York,
 JOHN G. CLARK, M.D., Philadelphia

Thursday, October 14

ROBERT C. COFFEL, M.D., Portland Transplantation of the Ureter into the Large Intestine in the Ab-
 sence of a Functioning Urinary Bladder

Discussion: WILLIAM R. CUBBINS, M.D., Chicago

SYMPOSIUM The Thyroid and Its Diseases

E. C. KENDALL, Ph.D., Rochester, Minn. The Chemical Influences of the Active Constituents of
 the Ductless Glands
 H. S. PLUMMER, M.D., Rochester, Minn. The Significance of the Metabolic Rate as Influenced by
 Thyroid Pathology
 GEORGE W. CRILE, M.D., Cleveland, The Protection of the Patient in Surgery of the Thyroid
 CHARLES H. MAYO, M.D., Rochester, Minn. The Thyroid and Its Diseases.

Friday, October 15

Convocation of the American College of Surgeons.

Conferring of Honorary Fellowships.

Presentation of Candidates for Fellowship.

Presidential Address: GEORGE E. ARMSTRONG, M.D., Montreal

Fellowship Address

BOOK REVIEWS

A CRITIQUE OF NEW BOOKS IN SURGERY

NO branch in medicine has made greater strides during the past ten years than orthopedic and reconstruction surgery. This cannot be entirely attributed to the stimulus afforded by the recent World War, since much had been attained prior to 1914, and since that date many of the theories have been put into operation, with startling results. As one allows his mind to travel over the progress made in this phase of surgery, one name seems to stand out most prominently, especially as regards operative treatment, and it seems so logical that we should have from Albee's pen the benefits of his vast experience as set forth in his new work on reconstruction surgery.¹ To incorporate in one volume the subject of orthopedic and reconstruction surgery seems to the reviewer not only a convenience but a necessity, since these two subjects bear such a close relation,

elevating and perfecting the subject of orthopedic and reconstruction surgery and in compiling a volume which incorporates what may be said to be the highest of present day standards of this phase of surgery. J. A. W.

AT the present time many surgeons unfortunately have adopted a certain postoperative routine treatment which is a standing order in the hospital, any deviation from which is more or less at the discretion of the house surgeon. With all due respect to the competent house surgeon and the faithful nurse who attempt to fulfill orders with the best interest of the patient at heart, many avoidable complications occur and patients are often allowed to suffer from conditions which could have been prevented and if present quickly relieved. How many of us have heard the patient bitterly complain of severe backache, intense nausea with vomiting, sleeplessness, and hiccough after operation. Only too frequently are we called upon to treat postoperative acute gastric dilatation, shock and hemorrhage. Postoperative paralytic ileus, acidosis, and anemia, are the constant dread of the careful and conscientious surgeon. The recent two volume treatise by Bartlett² is indeed opportune. Although the subject has been approached before, never has it been put into such excellent form and covered in such an interesting and complete fashion.

As the author states in the preface: "Such a work naturally divides itself into two parts; one which has to do with general subjects and the other with the measures of after-treatment as they are applied following operations upon the various organs." Hence the two volumes.

The thinking surgeon is not satisfied simply to be told that certain conditions should be treated in a certain way. He wants to know what is the cause, how it can be prevented, as well as how it can be relieved. In no work known to the reviewer are these manifold conditions more clearly discussed.

Volume I gives a classical, comprehensive discussion of every possible condition which may complicate the surgical case; Volume II the possible complications in regional surgical operations.

The work is invaluable to the young surgeon and a necessity for the house surgeon. Every surgeon, be he ever so competent, will read this treatise with great pleasure and benefit. J. A. W.

ters little so far as the treatment may be concerned. The author has in a marked degree clearly emphasized this in his recent work.

Albee has brought closely together the subject of chronic joint troubles, lesions of bones, nerves and muscles. His description of the pathology with associated clinical history and X-ray findings gives a tonic to an apparently dry subject. Probably no part of this new phase in surgery is more spectacular than the possibilities with the bone graft. Its uses have become so widely diversified that the laity and even the medical profession are astounded at the accomplishments. A word of caution may well be added so far as bone transplantation is concerned. No doubt that in the hands of Albee, with his technical experience and skill and with his ability to choose the proper procedure at the proper time and under the proper conditions, bone transplantation becomes an operation with no undue hazards and with results that have no peer. Nevertheless, in the hands of the less experienced, results may not be, and only too frequently are not, what is desired. Such a radical procedure is often chosen because of the brilliant results obtained by such men as Albee, when a much simpler and safer procedure for the individual in question would be the operation wisdom would dictate.

The whole surgical profession owes a debt of gratitude to the author for his untiring efforts in

¹ORTHOPEDIC AND RECONSTRUCTION SURGERY, INDUSTRIAL AND CIVILIAN. By Fred H. Albee, A.B., M.D., D.Sc., Lieut. Col. M.C., U.S.A. Philadelphia and London: W. B. Saunders Company, 1919.

²THE AFTER-TREATMENT OF SURGICAL PATIENTS. By Willard Bartlett, A.M., M.D., F.A.C.S., and collaborators. 2 vols. St. Louis: C. V. Mosby Company, 1920.

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and use it will satisfy the people among whom Dr. Murphy was most active that their monument will perform a service that will benefit all peoples for generations to come.

BIOGRAPHICAL

The readers of SURGERY, GYNECOLOGY AND OBSTETRICS do not require any reminder of the power and influence of this world-famed surgeon; but his reputation among the people of all walks of life, as related in the pamphlet issued by the Memorial Association, is interesting:

JOHN B. MURPHY, M.D

The death of Dr. John B. Murphy on August 11, 1916, was a great shock to Chicago, his home city. But Dr. Murphy, pre-eminently, was not only a local figure, but, to a degree attained by few, he was a citizen of the world, and his passing away was profoundly felt in London, Paris, Berlin, Petrograd, New York, and San Francisco. The tributes paid to him at the time of his death are still interesting as proving how a big man, regardless of his calling, may rise above his contemporaries and at his death be sincerely mourned, not only by the multitude whom he served in such a remarkable way in the practice of his profession, but by the world-leaders, men of intelligence and vision, who appreciated him during his life and who will always delight to honor his memory.

EXPRESSIONS OF APPRECIATION

Excerpts from some of the hundreds of messages received at the time of Dr. Murphy's death will serve to prove what the world thought of him and so help to form a proper estimate of his real worth. From national leaders: Woodrow Wilson, Washington, D. C.: "The medical world loses one of its foremost figures and our country sustains a real loss. I am sure I express the feeling of the whole country when I mourn his going." Theodore Roosevelt, Oyster Bay: "Dr. Murphy was one of the most useful men in this country and one of the men who added to our perpetuation all over the world. He was a great surgeon of international reputation and he was as staunch and whole-hearted a patriot as this country ever had. He was a great American citizen."

From the Church, Dr. Murphy received his greatest tribute while living. In recognition of his services to humanity and of his many works of Christian charity, His Holiness, Pope Benedict XV, bestowed upon him the honor of Christian Knighthood together with the Apostolic Blessing. Upon his death, many leaders of his Church sent their expressions of sorrow and their great appreciation of the loss suffered by the world.

From Europe: Sir Rickman J. Godlee, Bart., K.C.V.O., F.R.C.S., London, England: "I fell under the spell of his most original eloquence, which made hidden things clear and shed over well-known facts such a glamour that one seemed to be hearing of them for the first time from the lips of their discoverer. America has lost an incomparable teacher as well as one of her greatest surgeons." Sir Arbuthnot Lane, Bart., C.B., F.R.C.S., London, England: "Very few men have possessed his wonderful personality and attractiveness quite apart from his extraordinary originality and skill."

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NOTE.—Next month's issue of SURGERY, GYNECOLOGY AND OBSTETRICS will give the definite plan of the Executive Board in its campaign to raise funds for building and maintaining this monument to one of the world's greatest surgeons. In the meantime, a substantial number of large subscriptions are being received by the Board. Information in regard to the plan which is being formulated for subscriptions may be obtained through the President of the Board, Mr. Edward N. Hurley, Room 1314, 30 North Michigan Avenue Chicago.

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PLAN OF STATE ORGANIZATION

The plan of state organization, approved by the Board of Regents and state representatives present at the New York Congress last October, consists of:

1. All Fellows of the College resident within the state, to be known as "The (name of state) Section of the Clinical Congress of the American College of Surgeons."

2. A body of state representatives, one from each congressional district and two from the state at large, each to be elected by the Fellows of the state for a term of two years, one-half the number to be elected each year. This body shall

The following states have now organized clinical sections:

North Carolina	Missouri	Connecticut
Louisiana	Tennessee	Massachusetts
Texas	Kentucky	Maine
Arizona	Ohio	New Hampshire
California	Indiana	Vermont
Oregon	Pennsylvania	Iowa
Washington	Illinois	Minnesota
Idaho	Wisconsin	North Dakota
Montana	Michigan	South Dakota
Utah	New York	Nebraska
Colorado	Rhode Island	

It is important that the executive committees of the states already organized shall meet at an early date for the purpose of selecting the time and formulating tentative plans for their first sectional meeting. We are endeavoring to arrange these meetings in various parts of the country in such a way that representatives from the central office and speakers can visit more than one state in the district on a trip. Therefore, we are asking the state executive committees to notify the central office as soon as a tentative date for the first sectional meeting has been decided upon so that plans for the other state meetings may be formulated accordingly.

ANNUAL SESSION OF THE CLINICAL CONGRESS

The tenth annual session of the Clinical Congress of the American College of Surgeons will be held at the Windsor Hotel at Montreal during the week of October 11th of this year. It is proposed to hold meetings of all executive committees of the various states and provinces at some time during this week. At this meeting there will be discussions of problems incident to the organization of the state clinical sections and the conduct of the first annual clinical meetings. Formal notice of time and place of this meeting will be sent in advance to all members of the executive committee.

correspond in the state to the Board of Governors of the College.¹

3. An executive committee to consist of three or five Fellows, to be elected annually by the state representatives from among the Fellows of the state. The executive committee shall correspond to the Board of Regents of the College and be the supreme executive body within the state in the conduct of state clinical meetings.

The officers of the executive committee shall be a chairman and a secretary. The chairman shall preside at all meetings of the ex-

¹ Similar organizations will be effected in the provinces of Canada.

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charged with the duty of transmitting each afternoon to the bulletin editor at headquarters a list of the coming day's clinics. Each hospital shall provide an individual who shall honor or take up the tickets issued at headquarters for each specific demonstration.

PUBLICITY COMMITTEE

Impersonal ethical publicity is essential in order that the annual state clinical sessions may exercise the widest influence. To this end a publicity committee, appointed by the executive committee, shall see that invitations to all open meetings and summaries of the daily clinical bulletins are given to properly selected sources of publicity. All reports of clinical procedure submitted to the public press shall be carefully censored by the publicity committee, which shall see that nothing is published that does not conform to the strictest standards of professional ethics.

FINANCES

It is the wish of the College that no extra expense be incurred by the members of the College of the city in which the meeting is held.

An allowance of not to exceed \$3.00 a year for each member of the College in the state will be made by the central office to help defray the expense of conducting the annual state clinical sessions. There will be no individual registration fee.

Exhibits by publishing houses and dealers in surgical instruments and supplies may be arranged for at the discretion of the executive committee.

CO-OPERATION OF THE CENTRAL OFFICE

A representative from the central office will work with the executive committee and co-operate as far as may be necessary in carrying out the details of arrangements at headquarters, prepare tickets, clinical bulletins, and assist in the smooth running of the meeting. The central office will aid through recommendation in the selection, not only of orators for the afternoon lay meetings, but also of speakers of note for the evening sessions. To this end it is essential that the secretary of the executive committee shall at all times keep in close touch with the central office of the College.

for five minutes after the injection, and where large excisions can be carried out

The wound area is prepared by daily shaving, washing with soap and water, the removal of all scabs and crusts, and the application of a 2 per cent yellow mercuric oxide in zinc oxide ointment for three days, except on the epiglottis.

gasoline, and the wound is painted with 3 per cent tincture of iodine solution. The region is then disinfected by injecting a saturated solution of zinc chloride under pressure into all the sinuses and cavities of the wound. Five minutes are allowed for the penetration of the zinc chloride and great care is taken that every recess is reached. The infected wound is then stained with an antiseptic solution of methylene blue of the following composition

	Gm. or ccm
Saturated alcoholic solution of methylene blue	20
Caustic potash	3
Phenol	5
Ether to make	100

After this solution has evaporated the surface will be stained a dark blue-black which may penetrate from 1 to 3 mm. Outside of this a much wider zone of avascular grayish-white tissue that has been sterilized and devitalized by the zinc chloride will be found.

The devitalized area is excised *en bloc* and the

chloralhydrate, alcohol, and glycerine in a saturated solution of boric acid. These dressings are re-wet frequently and their application is continued until healing has occurred.

R B BETTMAN

ASEPTIC AND ANTISEPTIC SURGERY

Seedorf, J.: The Practicability of Employing Iodine for the Disinfection of the Skin. *Acta chirurg Scand*, 1920, lvi, 436

None of the methods for disinfecting inanimate objects is applicable to the skin. Heat sufficient for disinfection cannot be used on the skin and mechanical disinfection has proven unsatisfactory and in some cases causes pain.

Between 1870 and 1880 iodine came into extensive use for skin disinfection and experiments were made to determine its efficacy. The results varied greatly with different investigators. The solvents most commonly used for the iodine are ethyl alcohol and benzene. These it was believed dissolved the fatty coating of the skin and thus made

it possible for the iodine to attack the bacteria beneath it. Some investigators, however, maintain that the skin should be dry when iodine is employed, and that when the application of the iodine is preceded by scrubbing with soap and water numerous bacteria are present.

The author tested the action of iodine in various solvents, water with KI, ethyl alcohol, propyl alcohol, benzene, and ether. The best results were obtained with 50 per cent propyl alcohol. Alcohol alone had no effect on spores but saturated iodine solution killed them in thirty minutes.

It was found that three paintings with a 1 per cent solution gave as good results as two applications of a solution between 4 and 10 per cent. The most effective method of removing spores is mechanical cleansing and in the author's opinion the ideal disinfectant is iodine used in conjunction with mechanical cleansing.

The preparation of the skin consists of the following steps:

1. A thorough brushing with soap and water, shaving, washing with a 70 per cent solution of ethyl alcohol, and sterile dressing.

2. One-half hour before operation, three paintings at intervals of five or ten minutes with 1 per cent iodine dissolved in 96 per cent ethyl alcohol 50 per cent propyl alcohol. I. E. BISKOW.

ANÆSTHESIA

Tilley, H., and others: Discussion on Anæsthesia in Throat and Nose Operations. *Proc. Roy. Soc. Med.*, Lond., 1920, xvi, Sect. Anæst. and Laryngol., 1.

In all branches of surgery the anæsthetic not only spares the patient pain, but by inducing an appropriate type and degree of anæsthesia materially contributes to the success of the operation. More especially is this the case in throat and nose surgery in which an active co-operation between the surgeon and anæsthetist and an understanding of the steps of each other's work are essential to the success of the operation and vital to the patient's safety.

Operations upon the nose and throat are not generally serious in themselves. Unfortunately, however, deaths during operation have not been infrequent in this branch of surgery, and have been due either entirely to the anæsthetic or to the entry of blood into the air passages.

It is a fact that death during operation under ether is very rare and death due to uncomplicated ether anæsthesia is practically unknown. The status lymphaticus does not appear in association with ether anæsthesia. In England during the last five years nearly 1,500 deaths during operation have been reported. While these statistics give no indication of the condition of the patient before the operation and therefore are of little value, it is a significant fact that in a very great proportion of the cases the anæsthetic used was chloroform or a mixture containing it.

staff."

2. That membership upon the staff be restricted to physicians and surgeons who are (a) competent in their respective fields and (b) worthy in character and in matters of professional ethics; that in this latter connection the practice of the division of fees, under any guise whatever, be prohibited.

3. That the staff initiate and, with the approval of the governing board of the hospital, adopt rules, regulations, and policies governing the professional work of the hospital; that these rules, regulations, and policies specifically provide:

a. That staff meetings be held at least once each month (in large hospitals the departments may choose to meet separately).

b. That the staff review and analyze at regular intervals the clinical experience of the staff in the various departments of the hospital, such as medicine, surgery, and obstetrics; the clinical records of patients, free and pay; to be the basis for such review and analyses.

4. That accurate and complete case records be written for all patients and filed in an accessible manner in the hospital, a complete case record being one, except in an

to include at least chemical, bacteriological, serological, histological, radiographic, and fluoroscopic service in charge of trained technicians.

That standard is not, perhaps, so simple as it looks. But certainly it does not impose too large a burden of effort upon the doctor or upon the hospital. It calls for no undue expenditure of money. It is not impertinent, for it is based upon the sound principles of practice which the profession long ago accepted. It forces a constructive and co-operative scrutiny over all medical work in the hospital; unnecessary surgery, incompetent surgery, lax and lazy medical service, and all commercialism in medicine go down before it.

The minimum standard is not a theory. Wherever it is tried with sincerity, it succeeds. One result of it, too, is that it swiftly submerges personal prejudices among doctors and unites them under those bonds which have always made the profession great.

The second phase of the work consisted in a survey of the hospitals of Canada and the United States of one hundred beds and over, in order to bring to them the minimum standard and assist

them in carrying it out. Six hundred and seventy-one hospitals of one hundred beds and over, in both countries, were surveyed and it was found that only eight-nine were then living up to the requirements of the standard. The policy pursued, however, was to make it as comprehensive as possible to all these institutions and to help them to fall into line. During the past year another review has been completed and it is found that of these six hundred and seventy-one hospitals, one hundred and ninety-eight have complied with the conditions as laid down. During the present year the field is being actively and thoroughly worked and all hospitals of fifty beds and over are being reviewed. It is expected that possibly four hundred, at least, of the six hundred and seventy-one hospitals already referred to, will have reached the requirement. The workers are receiving great encouragement everywhere they go.

A splendid impetus to this movement in Canada was given last year when Mr. John G. Bowman, director of the American College of Surgeons, and Father Moulinier, president of the Catholic Hospital Association, made a tour through Canada. Their work has been followed up and augmented by others and no doubt a complete report of this will be made during the coming autumn in Montreal at the International Meeting.

In western Canada material progress has been made. A conference was held at Calgary on April 26 and 27, 1920, at which representatives from the various hospitals in the four western provinces—Manitoba, Saskatchewan, Alberta, and British Columbia, consisting of hospital superintendents, members of boards, Fellows of the American College of Surgeons, and others, met to discuss hospital standardization primarily. We found that great progress had already been made in the western provinces. Many hospitals in Manitoba, Saskatchewan, Alberta, and British Columbia had adopted the minimum standard in its full requirement. A splendid meeting was held, lasting two days. The Western Canada Hospital Association was formed, having primarily for its object the advancement of hospital standardization in western Canada. Several very valuable resolutions were passed by this conference which are of vital importance to hospital standardization. The conference very strongly approved and supported the minimum standard requirement and recommended its adoption by all the hospital associations and hospitals of the four provinces. The conference also approved of and recommended highly the plan of having a hospital association in each

The infiltrated tissues which have been blanched by adrenalin distort the anatomical picture and often confuse the operator. Hemorrhage varying from an extensive ecchymosis to a fair-sized hematoma is not uncommon. The vasoconstriction caused by the adrenalin is undoubtedly responsible for most of the local bleeding. The author advises that the adrenalin be withheld or that the hemostasis be made more complete. Bleeding is more com-

mon in patients who are given novocaine without adrenalin than in those who have received a general anæsthetic. A serous discharge from the wound occurs in practically all cases.

Retention of urine is more common after local than after general anæsthesia and complications, such as coughs and bronchitis, following local anæsthesia are equal those following general anæsthesia.

A. J. SCHOLL, JR

SURGERY OF THE HEAD AND NECK

HEAD

Cathey, G. A. The Surgical Treatment of Intracranial Pressure. *Northwest Med* 1920, vii, 126.

Cathey makes a linear incision extending from the juncture of the middle and posterior thirds of the zygoma to the parietal crest. The skull is opened with a burr at the lower angle of the wound where the bone is thinnest. With rongeurs a large elliptical opening is made (Fig 1). The dura is then cut so

that a flap with its base downward (Fig 2) is formed. This flap, which contains one of the branches of the middle meningeal artery, is then turned down and sewed in a tubular fashion around a grooved director (Fig 3). The dural tube thus formed is forced into the substance of the temporal muscle beneath the zygoma and acts as a permanent drain. The

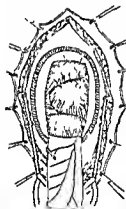


Fig 1

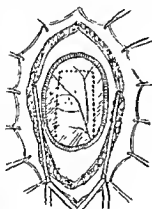


Fig 2

bleeding from the dura during the operation is checked with silver clips. The wound is closed around two gutta percha drains, one extending down between the dura and the base of the brain and the other between the muscle and fascia layers. These drains are removed after forty-eight hours.

The advantages of the operation are that it establishes permanent drainage and a permanent decompression.

R. B. BERTMAN

Symonds, C. P.: Cerebral Tumors and the Indications for Their Surgical Treatment. *Guy's Hosp Gaz*, Lond., 1920, xxvii, 154.

The clinical symptoms of cerebral tumors described in the text, headache, vomiting, papilloedema, and optic course of the intracranial



Fig 3

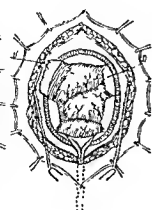


Fig 4

and an operation is performed at once. An endeavor should be made, therefore, to determine the location

cranial pressure

The two types of tumor most commonly found are gliomata and endotheliomata. The gliomata arise from the substance of the brain and vary greatly in their rate of growth. They grow more rapidly and are removed with greater difficulty than

CLINICAL CONGRESS OF AMERICAN COLLEGE OF SURGEONS

Tenth Annual Session, Montreal, October 11-15, 1920

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THE HOSPITALS OF MONTREAL

By MAUDE E. ABBOTT, M.D., MONTREAL

THE early hospitals of Montreal played an important part in the building of Canada and in the origin of Canadian medicine, and the record of their pioneer struggles and achievements forms one of the most interesting and even thrilling chapters in the dramatic history of that country.

The story of the Hotel Dieu de Ville-Marie, and of Jeanne Mance, its foundress, is one with the heroic history of the foundation of Montreal in 1642 by M. Chomedey de Maisonneuve, which was the outcome quite as much of religious devotion and missionary fervor, as of the spirit of commercial enterprise and adventure. The ro-

sity education in Canada. For, within its walls, through the youthful vigor, initiative, and organizing ability of its first medical staff, Drs Caldwell, Holmes, Robertson, and Stephenson, who were all graduates of Scottish universities, and imbued with the tradition and standard of their schools, arose the Montreal Medical Institution, which became the Medical Faculty of McGill University, and which not only fulfilled the conditions and saved the bequest of James McGill to the cause of education, but, through nearly thirty strenuous years, developed the organization and carried on practically the entire work of this, the pioneer university of Canada.

Hospital" of Montreal, by the Frères Charron in 1692. The present Montreal General Hospital, on the other hand, founded in 1821, sixty years after the English conquest of Canada from the French, through the philanthropy of the English-speaking or Protestant part of the community, holds the high honor of having been at once the birth-place and the cradle, not only of Canadian medical education, but also of all higher univer-

sity education in Canada. For, within its walls, through the youthful vigor, initiative, and organizing ability of its first medical staff, Drs Caldwell, Holmes, Robertson, and Stephenson, who were all graduates of Scottish universities, and imbued with the tradition and standard of their schools, arose the Montreal Medical Institution, which became the Medical Faculty of McGill University, and which not only fulfilled the conditions and saved the bequest of James McGill to the cause of education, but, through nearly thirty strenuous years, developed the organization and carried on practically the entire work of this, the pioneer university of Canada.

The Montreal General Hospital has had the further distinction of having had on its pathological and clinical staff during the first ten years of his professional life, the late Sir William Osler, who graduated from McGill University in 1872, and who laid the foundation of his future career as a clinician and diagnostician by his studies during his term as pathologist to the hospital from 1877 to 1885. The large and valuable pathological collections which he made at this time were placed by him in the museum of McGill University and are to be seen there, practically intact, today. His original autopsy

problem involved was complete removal of contaminated brain, blood-clots, hair, cloth, bone, and metal so that primary suture might result in clean healing. The method adopted was to remove the brain and clot by suction and irrigation and then with fine forceps extract bone and metallic fragments detected (if the cavity was sufficiently large) by a gentle palpating finger. If necessary, the hole in the dura was enlarged. In some cases this finger technique, which was always preferred if possible, was contra-indicated by the small size of the tract in the brain substance or the awkward situations of the wounds caused by the passage of the missile through the deep nasal sinuses. In such cases the cleaning was done as well as possible with a catheter and forceps.

The entrance of a foreign body into the brain tissues causes irreparable damage to a more extensive area than that involved in the actual track of the foreign body, and this cavity is further broadened by hæmorrhage. Hence the size of the metallic fragment or the dural aperture is not a true index of the wider area of damage represented by the brain cavity.

If such a cavity is not over 7 cm. deep and is large enough to admit a finger, cleaning with the forceps under careful finger control gives absolute insurance against sepsis and only very rarely causes increased cerebral trauma.

The cleansing of such a cavity by Cushing's method of catheter palpation is sometimes not complete and therefore does not prevent sepsis. Cushing's method moreover requires a prolonged operation and is successful only in the hands of those who have had large experience. H. A. McKnight.

Harris, W. A. A Clinical Lecture on Chronic Paroxysmal Trigeminal Neuralgia and its Treatment. *Brit. M. J.*, 1920, 1, 693.

This paper is based on an analysis of the records of 312 cases of trifacial neuralgia seen by the author in a period of twelve years.

In the large majority of cases the disease was unilateral and affected chiefly the second and third divisions of the fifth nerve. In a small number of cases the supra-orbital branch was involved, but was seldom affected alone.

Chiefly, the author concludes that the neuralgia is caused by stimuli affecting the nerve endings at their periphery. The theory is advanced that such stimuli are due to a septic neuritis of dental nerve filaments, the result of caries, pyorrhœa, or periapical abscesses. It is pointed out that no other nerve is so liable to chronic infection of its branches. Such infection may persist in the filaments in the jaw long after the focus has been removed. A num-

ber of cases were observed in which the pain began immediately after dental operations or antral abscess.

In the series of 312 cases, 62 per cent of the patients were women and 38 per cent men. In instances of unilateral involvement the right side of the face was affected in 62 per cent of the cases and the left side in 38 per cent. It is not clear why the right side is more often affected than the left and no information is available as to the relative frequency of dental pathology on the two sides. Other causes of the condition mentioned are severe chilling of the face, emotional shock, and blows upon the face or jaw. In some cases the onset was apparently cryptogenic. Sometimes the initial attack was very sudden and severe, while in other instances its development was insidious and it increased in severity gradually.

The age of onset varied from 17 to 85 years. In 13 cases the condition began before the age of 30. The average age of onset in 203 cases was 50 years. A considerable interval often elapsed between the onset and a recurrent attack. Such intervals ranged from a few months to thirty years.

In 5 cases heredity was apparently a factor. Although severe chilling of the face may have pre-

symptoms were observed from several days to a few minutes before the attack.

In the treatment of this condition little has been accomplished by drugs and the author now confines his treatment to two methods: (1) gasserectomy; (2) alcohol injection of the nerve trunks or the ganglion. The former is never attempted until alcohol injections have been tried. During the last ten years injections were made into the gasserian ganglion through the foramen ovale in 63 cases and in 31 of these the anaesthesia has remained total and there has been no recurrence of pain. When the ganglion is only partially infiltrated the third division will be totally anesthetized but the anaesthesia of the first and second divisions passes off quickly and pain is apt to recur within a year. If the ganglion is totally destroyed keratitis is prevented by strapping the lids closed during the operation and flushing the conjunctival sac twice daily with boric acid solution.

In the cases of 25 patients with bilateral involvement injections have been given on both sides, either simultaneously or at different times. Bilateral extirpation of the ganglion cannot be done because the motor branches of the fifth nerves are destroyed and jaw-drop results. Bilateral injections of alcohol, however, can be given as the destruction is less complete and the motor fibers are regenerated.

Before the injection of alcohol is made the surgeon must be certain that the needle has reached

the following hotels are recommended by the local committee: Ritz Carlton, Place Viger, Queen's, St. Lawrence Hall, Corona, Prince of Wales, Wilhemina, Freeman's.

Attendance at all scientific sessions and clinical demonstrations will necessarily be restricted to those surgeons who have registered for the Congress, and because of limited hotel and hospital facilities it will be necessary to enforce strictly the rule of limiting the attendance, requiring registration in advance on the part of those who expect to attend. A survey of the amphitheaters, lecture rooms and laboratories in the several hospitals and medical schools as to their capacity n made, and 1 When the through ad-

vance registration, no further applications will be accepted, which will be disappointing to many surgeons who have attended previous meetings, although the necessity for enforcing this rule will be apparent to all. This plan insures accommodations for all who register in advance, and in view of the limited hotel and clinical facilities only those who have registered may expect to be accommodated.

RAILWAY FARES AND TRAFFIC ARRANGEMENTS

- On account of the meeting in Montreal, the Canadian under certain special rates traffic associ of the United States. If a reduction is granted by them, notice will be sent to all who have registered.

In Canada the regulations of the railways provide that persons attending must purchase one-way ordinary first-class adult fare tickets (the fare for which must be not less than 75 cents) to Montreal and secure certificates to that effect on standard convention certificate forms, which must be deposited with the General Manager of the Clinical Congress, Mr. A. D. Ballou, at headquarters at the Hotel Windsor immediately upon arrival, for his endorsement and for validation by the special agent of the railway companies. The reduction in fare applies on the return trip, which must be made by the same route as traveled to Montreal, and the amount is dependent upon the number in attendance. A fee of 25 cents must be paid at the time of depositing the certificate.

In accordance with the above arrangement, tickets to Montreal will be sold in the territory covered by the eastern Canadian lines from October 7 to 13, the return tickets being good up to and including October 19. In the territory cov-

ered by the western lines, in Manitoba, Saskatchewan and Alberta, tickets to Montreal will be sold from October 6 to 9 inclusive, and in British Columbia from October 4 to 7 inclusive. Tickets for the return trip will be honored up to and including October 19.

The railways in the United States have been notified of the plans for the Montreal meeting, so that arrangements will be made for handling the extra traffic between the several gateways in the United States and Montreal. The New York Central Lines are prepared to care for the traffic via Chicago and Detroit, Buffalo and Toronto, or Buffalo and Utica, while the Grand Trunk maintains through service from Chicago and Detroit to Montreal.

SPECIAL FEATURES

On Tuesday, Wednesday, Thursday, and Friday afternoons at 2 o'clock in the ballroom of the Windsor Hotel will be presented a series of special clinical demonstrations presided over by Montreal surgeons and participated in by a number of the visiting surgeons. Among the subjects to be presented at these demonstrations are: Circulation in the kidney; circulation in the heart; circulation in the normal and gravid uterus; rhythmic contraction in the gall-bladder and bile ducts, war splints and treatment of fractures of the femur; differential diagnosis of lesions of the right side of the abdomen, including ovary and tube, appendicitis, intussusception, tumors of the cecum and ascending colon, kidney, gall-bladder, and pylorus; chest surgery and plastic surgery of the face.

The annual business meeting of the American College of Surgeons and the Clinical Congress will be held on Thursday afternoon at 4 o'clock in the ballroom of the Windsor Hotel.

CLINIC TICKETS

Attendance at all clinics and demonstrations is controlled by means of special clinic tickets, the number of tickets issued for any clinic or demonstration being limited to the capacity of the room in which the clinic or demonstration is to be given. As a general rule, one may secure two tickets for each day, one for a morning and one for an afternoon clinic, but for certain clinics, where the accommodations are limited and the demand for tickets is heavy, the rule will be that a visitor may have but one ticket for such clinic during the week. The use of these tickets has proven an efficient means of providing for the distribution of visitors among the several clinics and insures against overcrowding.

The ring magnet, so-called, is a scleroid or an apparatus for creating a magnetic field. The magnetic force at the center of the ring is expressed by the formula $\frac{2 \pi n i r}{10 r}$ in which n =the number of coils, i =the current in absolute units, and r =the radius of the coils. If a coil of soft iron is placed within the coil the magnetic field is greatly intensified.

The Haab type of magnet is apparently more powerful than the Melinger, but the latter has the following advantages:

- 1 The operation can be performed when the patient is in the recumbent position.
- 2 The necessity for changing the patient from the sitting to the recumbent position after the foreign body has been brought into view is eliminated. During this manoeuvre, which is necessary in the Haab operation, the fragment often changes position and is lost to view.
- 3 There is no necessity for the use of a hand magnet.

manipulation, a far different proposition to maneuvering the patient's head before a large magnet.

6 All operations are performed upon the open eye in an excellent light. When other magnets are used only side vision is possible.

7 The force used is under absolute control so that the most delicate and accurate procedures are possible.

W. F. MONTGOMERY

NECK

Frazier, C. H. The Principles Underlying the Treatment of Toxæmic Goiter. *Pennsylvania M J*, 1920 xxii 437.

Every patient with signs of incipient thyrotoxicosis should be subjected to an intensive examination

sleep and restriction of studies may be all that is necessary. In the mildly toxic type of adenomatous goiter operation is a procedure of choice rather than of necessity. A grave toxicosis due to adenomata, however, necessitates resection eventually. In

only one lobe is involved the total removal of the

lobe and the isthmus, and, in some cases, the ligation of the superior pole of the remaining lobe is the operation of choice. If both lobes are involved, a partial resection of both, leaving behind a strip of tissue in the posterior aspect of each, should be done.

M. H. KAMM.

Honeij, J. A.: Cervical Ribs; with Presentation of Cases and a Bibliography. *Surg., Gynec. & Obst.* 1920, xxi, 481.

According to Honeij, all the symptoms of cervical ribs may be present in the absence of cervical ribs and in some cases in which cervical ribs are discovered no symptoms are presented.

In studying a group of cases presenting positive symptoms of cervical rib in the absence of cervical rib the author found large, irregular transverse processes of the seventh cervical vertebra and a very narrow space between this vertebra and the first thoracic rib. On the other hand, in certain cases of true cervical rib the costal space was so wide that pressure on the nerves and blood vessels was improbable and consequently could not give rise to symptoms. Cases with curvature of the spine and relatively insignificant pressure, transverse processes, or rudimentary ribs, however, may show very severe symptoms.

Keen classifies the symptoms as follows.

- 1 Local symptoms: tumor, pressure pain, etc.
- 2 Nervous symptoms (more frequent than vascular):
3. Vascular symptoms: pulsations, ischæmia, gangrene, œdema, thrombosis, aneurism.
4. Muscular symptoms: wasting, loss of power,

of cases with various forms of neuritis are more numerous than those of cases with vascular disturbances. In many instances there are trophic and vasomotor affections. In others, muscular

taken for those of cervical rib are:

- 1 Conditions resulting from disease or traumatism: pulmonary apical tuberculosis; callus formation from fracture of the first thoracic rib or clavicle.
- 2 Tumor growths: glands, aneurism, enlarged thyroid.
- 3 Scoliosis, unilateral compression.
- 4 Abnormalities of the first thoracic rib or clavicle.
- 5 Inflammatory conditions: transitory torticollis of the shoulder joint; occupational neuritis.
- 6 Exostosis of transverse processes; scalene attachment; localized myositis ossificans.

MONTREAL GENERAL HOSPITAL

Tuesday, October 12

- J. A. HUTCHINSON—9:00. Surgical clinic, cholelithiasis.
 J. M. ELDER—9:00. Surgical clinic, septic infection of the knee joint.
 H. D. HAMILTON and R. H. CRAIG—9:00. Ear, nose and throat clinic.
 G. H. MATHEWSON and H. MCKEE—9:00. Eye clinic.
 DR. HARVEY—9:00. Remedial gymnastics.
 F. J. TEES and F. B. GURD—9:00. Fracture clinic.
 F. A. L. LOCKHART—2:00. Gynecological operations.
 H. D. HAMILTON and R. H. CRAIG—2:00. Ear, nose and throat clinic.
 F. S. PATCH and R. E. POWELL—2:00. Genito-urinary clinic.
 G. H. MATHEWSON and H. MCKEE—2:00. Eye clinic.
 A. M. FORBES and J. A. NUTTER—2:00. Orthopedic clinic.

Wednesday, October 13

- A. T. BAZIN—9:00. Surgical clinic, operative treatment of hernia, demonstration of fascia transplantation.
 E. M. EBERTS—9:00. Surgical clinic, type lesions of gastric ulcer.
 H. D. HAMILTON and R. H. CRAIG—9:00. Ear, nose, and throat operations.
 G. H. MATHEWSON and H. MCKEE—9:00. Eye clinic.
 DR. HARVEY—9:00. Remedial gymnastics.
 F. J. TEES and F. B. GURD—9:00. Fracture clinic.
 G. H. MATHEWSON—2:00. Operations on the eye.
 H. D. HAMILTON and R. H. CRAIG—2:00. Ear, nose, and throat clinic.
 F. S. PATCH and R. E. POWELL—2:00. Genito-urinary clinic.
 H. M. LITTLE and DR. PATRICK—2:00. Gynecological clinic.
 A. M. FORBES and J. A. NUTTER—2:00. Orthopedic clinic.

Thursday, October 14

- J. M. ELDER—9:00. Surgical clinic, empyema.
 J. A. HUTCHINSON—9:00. Surgical clinic.
 H. D. HAMILTON and R. H. CRAIG—9:00. Ear, nose, and throat operations.
 ... Eye clinic.

re clinic.
 Orthopedic

- operations
 H. D. HAMILTON and R. H. CRAIG—2:00. Ear, nose, and throat clinic.
 F. S. PATCH and R. E. POWELL—2:00. Genito-urinary clinic.
 G. H. MATHEWSON and H. MCKEE—2:00. Eye clinic.
 H. M. LITTLE and DR. PATRICK—2:00. Gynecological clinic

Friday, October 15

- E. J. ...
 A. ...
 traumatic paraplegia.
 ... Ear, nose, and
 ... Eye clinic.
 ... enito-urinary
 ... lney function

- H. D. HAMILTON and R. H. CRAIG—2:00. Ear, nose and throat clinic.
 G. H. MATHEWSON and H. MCKEE—2:00. Eye clinic.
 H. M. LITTLE and DR. PATRICK—2:00. Gynecological clinic.
 A. M. FORBES and J. A. NUTTER—2:00. Orthopedic clinic.

WESTERN GENERAL HOSPITAL

- F. R. ENGLAND—Modern treatment of fractures
 J. A. SPRINGLE—General surgery.
 GEORGE FISK—Treatment of fractures by mobilization and massage
 C. C. CURD, LORNE, GILDAY and J. J. IRVEN—Gynecological clinics, operations, and demonstration of cases
 F. GILROY—Orthopedics
 F. J. HACKETT—Treatment of wounds.

- CALVIN ROSS—X-ray demonstrations
 GEORGE D. ROBINS—Neurological cases.
 A. H. MCCORDICK—Surgical pathology.

HÔTEL DIEU

- A. MARIEN, E. ST. JACQUES, D. HINGSTON, and Z. RHÉUME—General surgery.

Demonstration of the value of the Ambard test in the evaluation of kidney function, followed by operations on the kidney

Treatment of cervical adenitis by the Calot method
 Value of X-ray examination in the diagnosis of gallstones, with operation on the gall-bladder.

Value of X-ray examination in the diagnosis of renal stone, with operation on the kidney
 Sponging and curetting of the pleura as shortening the convalescence of empyema

Particulars in gynecological technique.
 Blood transfusion by arteriovenous anastomosis

NOTRE DAME HOSPITAL

- O. F. MERCIER, B. S. BOURGEOIS, and DR. PARIZEAU—General surgery; operative clinics and demonstrations; treatment of fractures; surgery of the kidneys, prostatectomy; hypertrophy of the prostate; treatment

tion of cases; optic neuritis (choked disc) in relation to brain disease
 EUGENE PANNITON—Roentgentherapy in some diseases of women; in particular, fibroids of the uterus and metrorrhagia.

HOSPITAL STE. JUSTINE FOR CHILDREN

- DR. FERRON—General surgery; operations and demonstration of cases. Congenital deformities of the genital organs.

CHILDREN'S MEMORIAL HOSPITAL

- A. M. FORBES—General surgery and orthopedics in children.

rounded. It shows a single articular facet which faces upward, backward, and medially, while that of the first rib faces somewhat downward. The head of the first rib apparently articulated with the centra of both the seventh cervical and the first thoracic vertebrae.

The neck is 3 cm. in length, somewhat rounded near the head but enlarging until near the tuberosity, it acquires a breadth of 15 mm. It lies 7 mm. above and parallel to the neck of the first rib which it resembles in shape, size, and appearance. The upper and lower surfaces are rough and porous.

The tuberosity of the cervical rib is larger and

convex and triangular in outline, the apex being directed medially, and faces backward and medially as does that of the first rib.

In the author's opinion it is altogether probable that a cervical rib of this type would not produce motor, sensory, or vasomotor disturbances or interfere greatly with the apical expansion of the lung.

G. W. HOCHBERG.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Delbet, R. and Gaudet, C.: The Treatment of

The authors' treatment of non tuberculous purulent pleurisy consists of three stages. In the first stage a 12 cm. incision is made near the ninth rib and about 6 cm. of the rib are resected. In the second stage the pleural cavity is carefully cleaned, all accessible false membranes being removed from the walls. In the third stage drainage of the cavity is instituted by means of a special drain with a collar at its extremity. The collar is placed in contact with the parietal pleura and the pleura, muscles, and skin are successively sutured tightly around it. Continuous aspiration is obtained by means of a special apparatus with a manometer fixed to the free end of the drain.

In draining the pleural cavity the selection of the lowest point for the insertion of the drain is of only secondary importance. It is the filling out of the lung which, acting like the piston of a pump, effects the aspiration of the fluids in the cavity.

In the 16 cases in which the authors used the method described there were 14 complete recoveries without fistula and 3 deaths. The deaths were due to causes other than the pleurisy and were in no way attributable to the treatment.

The advantages of the method described are that it drains the pleura perfectly if the cavity has been carefully cleaned, empties the pleura by compelling the lung rapidly to resume its normal dimensions, obviates the necessity for painful dressings, and prevents the formation of a fistula.

W. A. BRENNAN

Hathaway, F.: The Immediate Closure of Empyema. *Brit. M. J.*, 1920, 1, 734.

The method of treating cases of empyema described by the author was practised in King's College Hospital twenty-five years ago under Lister. The author's work is therefore not pioneer work,

but he hopes that his results will stimulate others to follow the same procedure. Previous experience in France proved to him that mere rib resection and drainage is not the ideal nor the complete treatment of empyema. Re-expansibility is far more important. This is obtained in two ways: (1) by introducing the whole hand into the pleural cavity, freeing the lung of all adhesions, and removing all fibrous clots, and (2) by immediate closure of the wound.

Surgery of the chest as practised in France taught the surgeon to avoid the "sucking wound." Why de deliberately use of an open pleural cavity is made greater than that in the collapsed lung. To make the lung re-expand as soon as possible a va-

extensive Estlander operation. There is no reason why a pneumococcal infection should not be treated in the same manner as a tuberculous infection, in either case the open tube invites secondary infection.

Careful bacteriological studies are essential in every case of empyema. If pneumococci or staphylococci are present the wound may be sutured, but if streptococci are found it is advisable to remove the stitches and treat the cavity by some open method, such as the Carrel-Dakin method, packing with gauze, or drainage.

The operation is done as follows: The patient is placed in the supine position, the chest is filled with a 2 per cent suspension of iodoform in sterilized paraffin. The pleural wound is sewed with

until the return fluid is clear, when the chest is filled with a 2 per cent suspension of iodoform in sterilized paraffin. The pleural wound is sewed with

SEPTEMBER, 1920

International Abstract of Surgery

Supplementary to
Surgery, Gynecology and Obstetrics

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a well-encapsulated tumor of the breast was removed at the same time. The patient died four days later, her death being due entirely to the hysterectomy.

There were 9 periductal fibromata, 19 fibrocystadenomata, 16 cases of chronic cystic mastitis, 2 cases of papillary cystadenoma, and 2 cases of simple or blue dome cyst of the breast.

Malignancy developed later in 2 cases. In 1, the microscopic examination of the original benign tumor showed a papillary cystadenoma. In the other an operation was performed for pain and lumps in the outer and lower quadrant of the breast. A prompt recurrence took place within a few months. A radical amputation was then done, but the patient died with metastases in the mediastinum and liver a year later.

There were also 2 recurrences of benign tumors. In 1 case, after a periductal fibroma had been removed, a benign tumor which proved to be a fibrocystadenoma formed in the same breast. The other patient, from whom a fibrocystadenoma was removed was operated upon about three years later by another surgeon who removed one large cyst and several small cysts. Apparently therefore this patient developed a chronic cystic mastitis after the primary removal of a single benign tumor.

G. W. HOCHREIN

Rodman, J. S.: Precancerous Lesions of the Breast with Special Reference to Chronic Cystic Mastitis. *South M J*, 1920, III, 348

In devising and carrying out new methods of reconstructive surgery it should not be forgotten that surgery is still engaged in warfare against cancer and that the results obtained today, brilliant as they are when compared to those of four decades ago, must still be greatly improved. Figures are at times misleading, but it is food for thought that in the two years during which we were actually engaged in war only 76,433 soldiers were killed or died of wounds or disease, while during the same period 180,000 people died of cancer in the United States, that as a cause of death cancer ranks with pneumonia, heart disease, tuberculosis, and kidney disease.

One of the organs most frequently attacked by cancer is the female mammary gland. It has been estimated that about one-third of the total number of cancers occur in the stomach and about one-fourth in the breast. Therefore, approximately 25,000 lives are lost annually because of mammary cancer.

The author recently traced 68 patients who were operated upon by his father, the late W. L. Rodman. Of these, 49 (72 per cent) were well three years after the operation, 34 (50 per cent) five years or over, 14 (25 per cent) ten years, and 6 (8 per cent) fifteen years. The great improvement in the statistics from those of four decades ago is due largely to the development of the radical breast amputation. The author believes that as amputation of the breast cannot be made more extensive,

and as the best available statistics show only 50 per cent of cures lasting for five years, the results can be improved only by operation in the precancerous stage. There is a time in the history of every cancer of the breast when it can be removed completely and without even the probability of recurrence or metastasis. It is important, therefore, not only to continue educating the public regarding the very earliest symptoms of cancer of the breast but to go even further and teach them that any abnormal condition of the breast may be potentially malignant and should be carefully watched by a physician who thoroughly understands it.

In 200 consecutive cases of breast disease the following conditions were found:

	Cases	Per cent
Carcinoma	83	41.5
Abnormal involution (chronic cystic mastitis)	67	33.5
Benign tumors	30	15
Papillary cystadenoma	6	3
Tuberculosis	6	3
Sarcoma	5	2.5
Galactocoele	3	1.5

From this analysis it will be seen that abnormal involution or chronic cystic mastitis is next to carcinoma the most common disease of the breast. This disease, owing to its varied nomenclature, has been so confounded with other mammary conditions that the literature of the subject could not well be more confusing. A few of the names under which the condition has been described are: chronic mastitis, chronic cystic mastitis, general cystic disease, hydatid disease (Cooper), fibrous and glandular hyperplasia with retention cysts (Whitney), senile parenchymatous hypertrophy (Bloodgood), abnormal involution (Warren), intra-acinous cystic epithelioma (Reclus), and cystadenoma (Schimmelbusch).

The author has accepted Warren's classification of the different types of chronic cystic mastitis, the cystic and proliferative. In the cystic form the changes are predominantly in the stroma of the gland. The increased fibrous tissue presses on the ducts and leads to the formation of retention cysts. In the proliferative form the changes are chiefly in the epithelial parenchyma and may be divided into three sub-groups: (1) the acinar, in which there is an increase in the actual number of acini, (2) the proliferative, in which the epithelium is piled up and projects into the acini, and (3) the adenomatous, in which there is still greater epithelial proliferation, the acini being practically one mass of cells. The last type has the most pronounced tendency to become malignant.

Clinically it is quite impossible to distinguish between the several varieties. The macroscopic appearance of the breast, however, is characteristic. On section many cysts are seen, ranging in size from that of the smallest birdshot to that of a walnut. The cyst contents also vary widely, the contained fluid being sometimes as clear as spring water and again amber

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TRACHEA AND LUNGS

Hedblom, C. A.: Foreign Bodies of Dental Origin in a Bronchus. *Ann Surg*, 1920, lxxi, 568

It is possible that a large proportion of cases of foreign bodies of dental origin in the bronchi have not been recorded since of Weist's 1,000 cases only 103 were from the literature, the other 897 having

tooth was expelled spontaneously, in 1 it was discharged through a thoracotomy wound, and in 1 it was found during the postmortem examination. In the other cases no foreign body was found. The author reports these 7 cases in detail and reviews 45 proved cases from the literature. In the 52 cases the foreign bodies were, as follows

	Cases
Teeth	47
Artificial teeth	4
Dentures	2
Root canal broach	2
Dental burr	3
Allen's dental cement	1
Plaster of Paris	1
Hard rubber from gag	1
Blade of forceps	1

The bodies were found most often in the right lower lobe. In 26 cases the accident occurred during tooth extraction under general anesthesia.

The symptoms are those which are manifested immediately and those due to the prolonged presence of the foreign body in the bronchus. Coughing is the most common symptom and is frequently associated with dyspnea, cyanosis, wheezy respiration, pain in the chest, and nausea. In 7 cases there were no symptoms. In 36 cases of the series there was evidence of pulmonary suppuration. In the 16 uncomplicated cases the symptoms were marked in 7 and not mentioned in 9. The diagnosis was made by the X-ray in 5 cases. In 4 cases the foreign body was expelled spontaneously, in 10 cases bronchoscopic removal was effected. Two patients died following bronchoscopy and thoracotomy.

In the 36 complicated cases late symptoms developed. Coughing, which was usually associated with purulent sputum, was present in 29, hemoptysis in 8, and pain in the chest in 11. In 16 X-ray examinations the foreign body was shown in only 4. In 5 an abscess was revealed, and in 1, limitation of movement of the diaphragm. Five patients were treated by bronchoscopy, 3 successfully. Fifteen were treated by thoracotomy and in 13 cases the drainage operation for the suppurating process was done.

Three of the 13 patients who spontaneously expelled the foreign body died. Nine of the 15 patients on whom a thoracotomy was performed made a complete recovery, 2 were greatly improved, and 4 died. The postmortem findings in the 9 fatal

cases were empyema, bronchiectasis, abscess, ulcerated bronchus, and gangrene.

In making a diagnosis of foreign body in the bronchus the history of the case is of first importance. A positive diagnosis may be made by means of the history, X-ray, or bronchoscopy. In early uncomplicated cases bronchoscopy is the best method of diagnosing the condition and removing the foreign body. If the foreign body is not expelled spontaneously, bronchoscopy is the only method of treatment to be considered in early uncomplicated cases. Thoracotomy should be reserved for cases in which there is suppuration. V. C. HEYR.

MISCELLANEOUS

Moynihan, B.: Surgery of the Chest in Relation to Retained Projectiles. *Brit J Surg*, 1920, xii, 441

The author asks, "What is the fate of patients who have received wounds of the chest and who harbor a projectile within the thoracic cavity?"

The evidence of the seriousness of the discomforts to which patients of this type are subject is conflicting. Smooth bullets may give as much trouble as ragged shrapnel, and sterile missiles as much trouble as infected missiles. The location of the foreign body apparently has no influence on the symptoms.

In the discussion, of the pathology the wound of entrance, the path of the projectile, the condition of the pleural surface, and the infectivity of the missile are considered. The damage depends upon the size and shape of the projectile and its velocity. Portions of bone from the ribs or arm and fragments of clothing may be carried with the projectile and lodged in the parenchyma of the lung. It is miraculous that more damage is not done to large vessels and other vital structures.

The pathologic changes in the soft parts of the lung do not differ markedly from those in other parts of the body. When the lung is grasped in the hand the path of the projectile may be felt as a thickened cord. Sometimes the foreign body is partially surrounded by inflammatory elements, but complete encapsulation is rare. In some cases there is hepatization of the lung in the area surrounding the site of the projectile.

phragm, or mediastinum

Of 18 projectiles examined bacteriologically, 7 were sterile. The bacteria present were staphylococcus aureus, streptococcus pneumoniae, and coliform bacilli.

Pain on the affected side is one of the major symptoms. It is described as sticking, stabbing, or burning in character, or as a soreness. It is in-

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of the aorta, the origin of the carotids, the internal portion of the apex of the lung, the brachiocephalic trunks, the subclavian veins, and the entire half of the superior mediastinum

4. A method used by Duval in which the sternum is divided at the median line and the pericardium is incised. This is of advantage supposedly in operations on the right heart

Whatever the method used the essential requirements are sufficiency of light and the avoidance of permanent mutilation

In summarizing his experience the author makes the following statements

Forty-nine patients were treated by operation. One died from hemorrhage after the removal of a foreign body from the root of the lung, and 1 from sepsis following the removal of an infected foreign body. Forty-three patients responded to follow-up letters as follows. Twenty-four were in perfect health and able to do heavy work, 14 still have some shortness of breath or are a little better since operation; 3 are unable to work at all, 5 developed empyema after operation, and in 7 cases blood collected in sufficient quantity to require aspiration.

The protocols of the operations are given in detail. O C NELSON

Wassermann, S.: Mediastinal Emphysema (Das mediastinale Emphysem). *Wien klin Wchnschr*, 1920, LXIII, 122

During the last influenza epidemic the author observed in 4 cases swelling in the neck, in the fossae

supraclavicularis, and in the upper anterior and posterior thoracic wall which, because of the crepitus, was recognized as emphysema. Percussion elicited tympany all over the sternum, cardiac dullness being entirely absent. Death occurred in all 4 cases and 3 came to autopsy. Very extensive pneumonia was found. The mediastinum was filled with air; also the connective tissue internal to the sternum and external to the parietal pericardium.

The phenomenon which must be considered ex-

connective tissue, creeps along the bronchi to the hilus of the lung and the mediastinum, and finally reaches the neck and thoracic wall.

In the literature the following symptoms are also mentioned: a peculiar up and down rubbing sound (Laennec); a hyperresonant percussion note over the lung and the disappearance of cardiac dullness (F Mueller); synchronous cardiac crepitus and weakness of the respiratory murmur (Frienkel); and very severe attacks of cardiac stenosis (Fraenkel).

The cardiac stenosis, which Wassermann also observed, is attributed to the involvement of the pericardium (irritation of the nerves). Another important diagnostic sign is the rapid rate of respiration

Early diagnosis is facilitated by the X-ray. In children mediastinal emphysema occurs quite often in bronchopneumonia and pertussis. JASTRAV (Z).

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Biggs, M. H.: Pseudomyxoma Peritonei. *Ann. Surg.*, 1920, LXXI, 619

Pseudomyxoma peritonei has received but scant recognition by American observers and writers. It results from the rupture of a pseudomyxomatous cyst of the ovary or appendix, the epithelial cells thus discharged being implanted on the peritoneum where they produce pseudomucin and tumor formation

The condition was originally believed to be secondary to a cyst of the ovary, but is now known to originate also in the appendix

Failure of pseudomyxoma peritonei to result from rupture of a pseudomyxomatous cyst is explained by (1) the infrequency of rupture of the smaller loculi which contain cells that are active but firmly adherent to their basement membrane, and (2) thinning of the walls of the larger loculi, the cells at the point of rupture not becoming

and irritation of the peritoneum to a large quantity of thick, tenacious material and secondary tumor formation of the peritoneum covering the abdominal viscera. The author describes a fine pebbly appearance of the peritoneum which he considers characteristic of the early stage of pseudomyxomatous development.

Age should be taken into account in the diagnosis. The lesion occurs in advanced life, after the menopause in the female, at a time when many other conditions may be excluded. The average age of the author's patients was over 60 years.

At operation it is important to remove all the original growth. When this is done and a careful toilet of the peritoneum is made, early cases may be cured

The author's conclusions are as follows:

1. Pseudomyxoma peritonei is much more frequent than is generally believed
2. It is caused by cellular implantation
3. It is histologically benign, but may be clinically malignant
4. If it is considered a form of cancer, it must be assumed that pseudomucin inhibits its destructive power

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SURGERY OF THE NOSE, THROAT, AND MOUTH

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The author reports two cases of pointed bodies in the intestine. Generally the movements of the intestine and the progression of the intestinal contents favor the spontaneous evacuation of foreign bodies, but often pointed objects such as pins are arrested in their progress and fall into the cæcum where they become imprisoned.

The first case reported by the author was that of a child who had swallowed a large-headed pin. When the patient was brought to the hospital complaint was made of abdominal pain about the right iliac fossa. Radioscopy showed the presence of a pin in this region and at operation the pin was found in the appendix.

The second case was that of a child who had

caused small hemorrhages into the mucosa. With some difficulty it was moved into the appendix and the appendix then removed.

W. A. BRENNAN

Moreton, A. L.: Intussusception Occurring in the Course of Typhoid Fever. *Brit. J. Surg.*, 1920, vii, 490

The author calls attention to the rarity of intussusception in typhoid fever and mentions the comparatively few references to the subject found in standard text books on medicine and surgery. He describes in detail a case that came under his observation and gives short abstracts of ten other cases he found reported in the literature.

These cases are also analyzed. The average age incidence was 21 years. Intussusception in typhoid fever is most apt to occur in the later stages of the disease. The enterocolic variety is the more common. In the enteric type there may be more than one intussusception. The symptoms and signs are those of a sudden abdominal catastrophe of the nature of intestinal obstruction. A mass was felt in three cases and in only one case was there a blood-stained discharge from the bowel.

Most of the cases collected by the author had been diagnosed as perforation. In intussusception, however, the sudden catastrophe is not quite so great as in perforation, the abdominal movements are not restricted, the abdomen is soft, the pain is colicky, a mass may be palpable, the area of liver dullness is not diminished, and the leucocyte count is not increased.

Surgery is indicated and gives good results. Six patients were operated on and five recovered. Of five patients who were not operated on, four died

The patient who recovered without surgical intervention passed the gangrenous intussusceptum per anum.

The disease condition of the bowel demands that great care be taken in the manipulation at operation. The invagination may be initiated by inflammatory changes in the bowel causing irregular peristalsis or by an enlarged Peyer's patch. J. E. MCCORMIE

McGuire, S.: The Treatment of Duodenal Fistula. *Surg., Gynec. & Obst.*, 1920, cxx, 460

The aggregate number of duodenal fistulae is large, but as the actual number occurring in the practice of individual operators is small, little has been written on the subject. This is to be regretted as the condition is often fatal and the best method

to nine days at a time when the patient is supposed to be out of danger. In some cases the amount of discharge is small, while in others it is large and consists of all the water and food taken by mouth and all the secretions of the stomach, liver, and pancreas. The irritating effect of the digestive juices on the skin produces great discomfort, and the lack of nourishment and rapid loss of body fluids causes an alarming loss of weight and strength.

If the leak is small and the patient's condition is good, an effort must be made to secure spontaneous

nephrectomy and the opening is on the posterior wall of the duodenum direct suture should be done by opening the abdomen through the upper right rectus and mobilizing the duodenum according to the method advised and practiced by W. J. Mayo. When the fistula has followed an operation on the gall-bladder and the opening is on the anterior wall, direct closure is not often feasible because the

and others have advised posterior gastro-enterostomy with or without closure of the pylorus. In cases of duodenal fistula resulting from ulcer this is the ideal method as it not only meets the immediate indications but also cures the primary disease. In other cases it cannot be used because of the patient's condition or it results in an anatomical abnormality which is to be regretted.

The author reports a case in which he did a secondary operation for obstructive jaundice due

causing the patient was well for three days and then

INTERNATIONAL ABSTRACT OF SURGERY

SEPTEMBER, 1920

ABSTRACTS OF CURRENT LITERATURE GENERAL SURGERY—SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Wight, J. S.: A Clinical Study of Open Reduction Operations of Fractures of the Long Bones with Two New Bone Clamps. *Surg., Gynec. & Obst.*, 1920, xxx, 523

The author advocates open reduction and reten-

tion during acute disease or infection and chronic disease or infection should be given preliminary treatment. No case should be operated until the carbon dioxide combining power of the blood has been raised above 40 ccm. In cases of recent injuries the operation should be delayed about two weeks.

The author is impartial as to methods of fixation, using sutures, screws, Lane plates, and inlay grafts as indicated. A table of incisions for reaching various portions of each of the long bones is given. The clamps spoken of are not described but are shown in an illustration. One of them, a clamp with compound levers, is called an angular bone clamp. The other works on the toggle joint principle. Both should be powerful and efficient.

The results in 263 cases of various fractures of the long bones treated by operation are given in tabular form. Bony union was obtained in 262 cases. There was 1 death, a mortality of 0.45 per cent.

B. H. MOORE

Hewitt, H. M.: The Preparation of the Skin for Surgical Operations. *Grace Hosp. Bull.*, Detroit, 1920, iv, 29.

In the sterilization of the skin two important factors are: (1) the patient's ability to resist infection, and (2) the relative value of the method and antiseptic used. Among factors of less importance which may be responsible for poor wound healing are syphilis and seasonal changes. Beckman found a larger percentage of infections in the colder

months than in summer and concluded that this was due to a decrease in the activity of the skin in the winter.

A method to obtain skin antiseptics must be simple and easy to apply. The antiseptic, preferably a solution, must be efficient, i.e., it must have the power to destroy the common skin organisms in a comparatively short time (not over three minutes) and should be sufficiently penetrating to keep the skin sterile during the operation. It must not macerate or injure the skin in any way. In laparotomies it must not injure the peritoneal coat of the intestine if it accidentally comes in contact with it. It should be applicable to all cases and standardized so that its antiseptic value may be known. It should not contain any proprietary preparation as the strength of such agents varies, they do not conform to any definite standard, and they cannot be depended upon.

A series of cases were selected for experimentation with several antiseptics, among which were McDonald's solution, 70 per cent alcohol, picric acid, tincture of iodine, and ether. In 100 cases of all varieties in which picric acid was used there were only 4 infections.

A. R. HOLLANDER

Babcock, W. W.: The Immediate Sterilization and Closure of Chronic Infected Wounds: A New Method Applicable to Wounds of the Bones and Soft Tissues. *J. Am. Med. Ass.*, 1920, lxxiv, 1301.

With the mass of the chronic infections of the war the aim of the Carrel-Dakin treatment—the early closure of the wound—has not been attained.

The author proposes a method of treatment which in his hands in about 350 cases in General Hospital No. 6, Fort McPherson, Georgia, proved very satisfactory. The treatment is applicable to chronic infected wounds of soft tissue and bone, especially in those parts of the body where, by means of a tourniquet, the solution can be prevented from entering the general circulation during and

Chaoul, H.: The X-Ray Treatment of Cancer of the Rectum (Die Roentgenbestrahlung beim Rectumcarcinom) *München med Wchschr*, 1920, lxxvi, 179

To date, the X-ray treatment of rectal cancer has been unsatisfactory. The use of radium within the rectum is more successful. Radiation causes a melting away of the tissue. Faecal obstruction, foul discharge, and pain may also disappear. The results are not permanent, however, as in the periphery the cancer continues to spread. The reason for this is the fact that the radium rays have an intensive action on the cells near them while those farther away are given an irritation dose rather than a fatal dose. A more effective action is obtained at the periphery with X-ray treatment if it is given intensively and from various fields.

Localization is possible by palpation with the finger, the tumor edges being marked with a sound. With maximal radiation by means of Coolidge tubes, 0.7 zinc filter, the results are greatly improved. Following a primary negative stage characterized by malaise, headache, nausea, vomiting, and slight fever, continuous improvement is noticed in about two weeks. So far, only inoperable cases have been treated as in the others surgery is the treatment of choice. CARL (Z)

Boas, T. C.: *Ann Surg*, 1920, lxxviii, 179

XVI. 1

Boas treated 62 cases of hæmorrhoids conservatively as follows:

The bowel was cleansed by catharsis and soap-suds enemas. Then, with the patient in the knee-elbow position and under local anaesthesia, suction was applied to the venous knot. Next, a 90 per cent solution of alcohol was injected deeply into the external knots, 2 ccm into the small knots and 5 ccm into those which were larger. After the injection the hæmorrhoids were left outside or pushed high up into the rectum.

Following this treatment the hæmorrhoids became necrotic and sloughed off within a period varying from six to fourteen days.

A patient with a single hæmorrhoid was kept in bed for several days but the bowel movements were not stopped. A patient with numerous hæmorrhoids was kept in bed for four or five days on a liquid diet and given first opium and then a laxative.

The method described is indicated in all cases of prolapsed hæmorrhoids even though they may recede spontaneously. In cases of hæmorrhage rectal injections of 5 per cent calcium chloride are given. In 64 per cent of the cases healing occurred normally, but in 36 per cent it was interrupted by recurrent hæmorrhage, pain, and retention of urine. In 2 cases there was a recurrence.

RAPSCHKE (Z)

LIVER, GALL-BLADDER, PANCREAS, AND SPLEEN

Cohn, I. M.: Primary Cancer of the Liver. *J. Lab & Clin Med*, 1920, v, 513

Primary malignancy of the liver is a very rare condition. It is found in about $\frac{1}{10}$ of 1 per cent of autopsies, being much more rare than secondary malignancy. The secondary condition is from twenty to forty times as frequent.

The primary nodule being formed about a dead parasite in the liver, and in another leprosy bacilli were found scattered through the stroma of the liver.

Biliary calculi have been associated with carcinoma. There are two views as to their relationship. According to one theory the carcinoma is due to the irritation set up by the calculi. According to the other the growth is the cause of the calculi. In most instances gall-stones are present, but in cases of secondary carcinoma they are rare. Arteriosclerosis has also been advanced as a cause of primary cancer of the liver.

There are three important types of liver carcinoma, namely, massive, diffuse, and nodular. The massive type, which is the most frequent, consists of a large mass inside the liver, the liver tissue forming the shell of the growth. The tumor cells are usually polyhedral or spheroid. The diffuse type, in which there is an infiltration of spheroidal cells in the liver tissue, is very rare. The nodular or multiple primary carcinoma is more common than the diffuse.

are poly

mary carcinoma occurs in the cirrhotic liver, and a fifth type is the primary melanotic carcinoma.

The tumor is set in action by an irritation leading to proliferation of the endothelial cells. The contents of the vessels are replaced by an embryonic tissue similar to that from which blood and blood vessels originate. Associated with this process is a rapid destruction of the normal liver tissue. Examination of the carcinomatous cells shows them to be quite similar to hepatic parenchyma. They have a trabecular arrangement, but are larger than those of normal tissue. In many tumors the cells are bile-producing and the tumor may be considered a direct change of liver cells to cancer cells with a hyperplasia of the new formation. The growth is compensatory and proliferates by direct extension.

Metastasis in cases of cancer of the liver comes at a later period than in malignant disease elsewhere in the body and is not so widespread. The retroperitoneal glands, the omentum, and the lungs are involved frequently, but the supraclavicular glands and the heart rarely.

Rood was indebted to Silk for reports of deaths under anaesthetics in the military hospitals. In two years and three months 121 patients died, 110 of the fatalities having occurred under anaesthesia induced with chloroform or a mixture containing it, and 11 under ether anaesthesia. Of the 11 patients who died under ether 9 were apparently dying of secondary hemorrhage before the operation was begun. Each of the various Commands reported fatalities. The only Command with no death upon the table was the Irish Command which "would not even look at CHCl₃."

The author reports 2 chloroform deaths. One patient died during the induction of anaesthesia for an adenoid operation and the other, a healthy child, from acidosis following narcosis for an X-ray photograph of a deformed foot.

If death occurs under ether it is justifiable to assume that the patient was either in extremis or that some technical difficulty arose which might have been foreseen. Furthermore, death does not occur from acidosis after ether.

Great improvement has been made in the method of giving ether, so that today every type and degree of anaesthesia which can be induced with chloroform can be obtained equally well with ether. The author contends that ether is the proper anaesthetic for operations upon the nose and throat. Any degree of anaesthesia can be produced and continued with ether alone.

The author describes his technique for inducing anaesthesia and discusses light and deep anaesthesia and the methods for preventing blood from passing into the pharynx and larynx.

In the discussion of Smithies' paper Tilley stated that in anaesthesia there are two points to consider. The first and most important is the patient's safety and the second the convenience of the surgeon. With regard to the first Tilley is of the opinion that no one will dispute the contention that ether is safer than chloroform or any mixture in which chloroform is an important constituent. He has seen 11 deaths under chloroform anaesthesia, 3 of them in his own practice. Two occurred before the operation had been begun. In each instance a comparatively trivial operation was to be performed and the patient was comparatively healthy. After an experience of this kind one turns to any method of anaesthesia which promises to eliminate such disasters.

The worst danger of chloroform is that one can never foretell when a calamity will happen. It is true that a little more oozing occurs during operations under ether, but it takes place when the sur-

point which would have been evident if ether had been used, may begin to bleed. In the case of a child it may be necessary to induce anaesthesia again and perform practically a second operation

Sir St. Clair Thompson reported 3 deaths and stated that according to his observations neither the operator's technique nor that of the anaesthetist seemed to account for the fatality. In the 3 cases the postmortem examination was made by an independent pathologist and status lymphaticus was found in all.

ISABELLA HERB.

Rogers, J. B.: *The Effect of Ether Anaesthesia and Subcutaneous Injections of Ether on the Circulating Leucocytes.* *Am J Surg*, 1920, xxiv, Anns Supp., 46.

Rogers found that there is a rise in the leucocyte count in dogs following ether anaesthesia or a subcutaneous injection of ether. The dogs were not operated upon but simply anaesthetized and therefore any change resulting must be attributed to the ether.

The relation between the polymorphonuclear leucocytes and the mononuclear cells varied but slightly. The average white cell count before anaesthesia was 12,711. Of these, 38.8 per cent were mononuclear and 61.2 per cent polynuclear cells. One half hour after the anaesthesia the average white count was 16,085. Forty per cent were mononuclears and 60 per cent polynuclears.

In rabbits the average count before anaesthesia was 11,875 cells, 46 per cent of which were mononuclear cells and 54 per cent polymorphonuclear cells. After anaesthesia there were 11,750 cells and of these 37 per cent were mononuclears and 53 per cent polymorphonuclears.

R. B. BETTMAN

Savignac, R., and Vidal, J.: *Changes in the Rectal Mucosa following Narcosis by Intrarectal Etherization* (Alterations de la muqueuse du rectum à la suite de la narcose par étherisation intrarectale). *Arch de mal de l'appar. digest*, 1920, x, 428.

Intrarectal etherization causes a slight and temporary rectitis which disappears spontaneously within a few days.

The more serious changes which have been reported may be attributed to the use of a technique in which a high dosage of ether is employed or to the presence of a lesion of the rectum.

A patient who is believed to have a rectocolic affection should be subjected to intrarectal etherization only after a careful proctoscopic examination of the mucosa of the rectum and sigmoid.

W. A. BRENNAN

Griffiths, G. H. C. S.: *Novocaine Anaesthesia; Some Disadvantages from a Surgical Standpoint.* *Lancet*, 1920, cxviii, 960.

In the induction of local anaesthesia strict aseptic methods must be observed particularly in the preparation and administration of the solution. Perfect anaesthesia is obtained with a 0.5 per cent solution of novocaine with 5 minims of adrenalin to the ounce. Shortly before the operation the patient should be given a hypodermic injection of 1/150 gr. of scopolamin and 1/6 gr. of omnopon

thickened tissue. The patient is usually thin and states that the condition has been present for a very long time. The findings are usually hydrops or markedly contracted and thickened gall-bladder with stones.

The author summarizes his reasons for believing that the X-ray, duodenal aspiration, and determinations of the blood cholesterol cannot be regarded as of great value in the diagnosis.

I. E. BISKOW

Prat, D. Obstruction of the Gall-Bladder (La vesícula biliar tapada). *An Fac de med Univ de Montevideo*, 1919, IV, 873.

The most common etiological factor of gall-bladder colic is the presence of stones. In this variety of colic the stones are usually few and large. In many cases there is only a single large stone. Such a calculus may occupy almost any position but is more commonly found in the fundus. The colic arises from contraction and spasm of the gall bladder walls caused by irritation due to the stone.

Three pathologic types of gall-bladders are

1. The usual type. Often in gall-bladder colic the gall bladder appears normal from without, but a more detailed examination shows that its walls are congested and oedematous and perhaps adherent to neighboring viscera. Adenopathy of the biliary glands.

duct.

3. The gall-bladder of chronic cholecystitis with enlarged, greatly thickened, fibrotic, and infiltrated walls. The shape is pyriform and the mucosa injected and often ulcerated. There may be adhesions to neighboring organs.

The symptoms are described briefly. They consist of

enlargement of the face

region and often radiates to the back or the right shoulder. It is aggravated by the ingestion of food and by pressure. Nausea and vomiting are usually present but not as marked as in hepatic colic. The liver is not enlarged but the gall-bladder may be palpable and very tender.

ed, icterus, stones in the faeces, and clay stools are absent, and the gall-bladder may usually be palpated. It may be distinguished from cholecystitis by the absence of fever and the fact that the pain is of shorter duration and more intense.

somewhat gangrenous walls. Usually a loose stone is present in an accessory pocket or diverticulum and closes its outlet when forced into it.

2. The hour-glass gall-bladder. This is of medium size and has a diaphragm or stenosis near the middle, the fundus forming a separate compartment in which stones are found too large to pass through the constriction.

3. The gall-bladder with valves of mucosa forming a stenosis at the outlet and causing impaction and walling off of stones which results in permanent obstruction to drainage.

4. The gall-bladder with marked lesions of the walls. The walls are very fibrotic and irregularly contracted as the result of cholecystitis and there are dense adhesions to neighboring structures.

5. An elongated bladder with multiple calculi. Such a gall-bladder may become folded upon itself and retain this shape because of the development of adhesions.

6. The gall-bladder in which obstruction is due to tumors in the wall itself or the pressure of neighboring tumors.

W. R. MEEKER

MacCarty, W. C. and Corkery, J. R.: Early Lesions in the Gall-Bladder. *Am J M Sc.*, 1920, CIV, 646.

The authors classify 4,098 gall-bladders removed at the Mayo Clinic from January, 1913, to January, 1919. Early changes noted were: congestion and edema of the villi, lymphatic infiltration in the mucosa, submucosa, muscularis, and subserosa; fibrosis of the villi, which sometimes extended into

epithelium or mucosa were found in the mucosa

pearance

Although the early conditions described do not give rise to symptoms forming a definite clinical picture they are undoubtedly responsible for a number of general disturbances of a toxic nature.

A. J. SCHOLL, JR.

Weiss, S.: The Prophylaxis and Treatment of Gall-Stone Disease. *Med Rec*, 1920, CCVII, 860.

The treatment of gall-stone disease should be medical but surgical treatment has its place. From 6 to 10 per cent of cadavers show the presence of biliary calculi. Only 1 of 20 persons with gall-stones have symptoms.

The medical treatment includes the following divisions:

1. The prevention of stagnation by exercise, the wearing of loose clothing, meals at short inter-

endotheliomata which, being of meningeal origin, are usually easily and successfully removed. Endotheliomata show but few signs of malignancy.

In attempting to determine the location of intracranial tumors attention should be given to the sensory changes, especially the sense of position, the ability to recognize objects by their size and shape, and the appreciation of differences in the intensity of pain and temperature stimuli. The localization of tumors in various specific areas of the brain is discussed in detail. G S FOULDS

Hanson, A. M.: A Report of Wounds Involving the Head and Spine Cared For at Evacuation Hospital No. 8, A. E. F. *Mil. Surgeon*, 1920, LVI, 474

The various injuries of the head and spine, the operations performed, and the mortality are summarized as follows:

Scalp Wounds	No	Per cent
Scalp only	136	0
Mortality		
Skull Fractures with Intact Dura		
Operations	102	
Mortality		3 9
Craniofacial, Sinus, and Craniosinus		
Injuries		
Cases	89	
Mortality		44 2
Spinal Injuries		
Bony spine only	12	
Deaths	0	
Injuries of Spine and Cord		
Cases	32	
Operations	24	
Operative deaths	13	
Operations		
Excision of scalp with exploration of skull	213	
Mortality		3 7
Trephinations of the skull	105	
Mortality		31 4
Decompressions	15	
Mortality		21 4
Laminectomies	18	
Mortality		72 2

of damaged fracture and areas in which

wound swabbed with ethyl-alcohol. The surgeon's gloves and instruments were then changed and sterile towels were clipped to the edge of the wound. The patient was requested to cough in order to cause the extrusion of the pulped brain and bony fragments. After this a soft rubber catheter was passed in these other pieces when these in esquil-
tomy forceps. From time to time the track was irrigated with tenth-normal saline solution to remove debris and pulped brain tissue. As the catheter was removed a small quantity of ethyl alcohol was injected. The wound was then swabbed again and the scalp closed in two layers with interrupted suture of No. 2 chromic gut. Small tears in

the sinuses were repaired with muscle graft and large tears with a portion of pericranium.

The author summarizes his conclusions as follows.

1. All injuries of the head should be operated upon under local anæsthesia and as early as possible.
2. Excision of the scalp and exploration of the skull should be done in all cases of scalp injury.
3. Foreign bodies should always be removed if possible, the scalp should be closed in two layers, and the patient should not be moved for six weeks if suffering from cerebral injuries.
4. Spinal injuries with severance of the cord should not be operated upon and a patient with such injuries should never be catheterized.
5. The high mortality in spinal cases is due to complicating abdominal and chest injuries

LOUIS HANDELMAN.

Bellin and Vernet: The Extraction of, and the Routes of Approach to, Foreign Bodies in the Pterygomaxillary Fossa and the Base of the Brain (Sur l'extraction et les voies d'abord des corps étrangers de la fosse ptérygo-maxillaire et de la base du crâne) *J de chir*, 1919-20, XV, 616.

The authors report three cases in which a foreign body was extracted from the pterygomaxillary fossa, the retrostyloid region in front of the atlas, and the prevertebral region respectively. They have not been able to find any case recorded in the literature in which a foreign body was extracted from

at this level is
of the lateral
sinus is not dangerous and suppresses the venous
e

It was not practiced, however, in the three cases reported, tampons only being used, with ligation of the internal carotid when necessary.

In two cases the foreign body was approached by the classical retrosternomastoid and the presternomastoid routes. In the case in which the projectile was in the pterygomaxillary fossa there were several possible routes of approach but the trans-sinusomaxillary route was chosen. By resecting the external part of the tuberosity of the maxilla (the infero-external wall of the sinus) the authors succeeded in extracting a large foreign body. The resection of the postero-superior wall of the sinus was the most extensive possible. The use of this route does not leave an ugly scar, the incision closing primarily or secondarily as in the Caldwell-Luc method. Drainage is obtained through the nose. The branches of the facial nerve are not affected.

W. A. BRENNAN.

Towne, E. B., and Goethals, T. R.: Finger Exploration of Gunshot Wounds of the Brain. *Ann. Surg.*, 1920, LXVI, 531.

An unselected series of 28 brain wounds in a forward hospital were treated upon the theory that the

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES,
TENDONS, ETC.

Taylor, A. S. Brachial Birth Palsy and Injuries of Similar Type in Adults. *Surg, Gynec & Obst*, 1920, xix, 494.

The author takes issue with those who claim that brachial birth palsy and similar injuries nearly always become cured spontaneously. The percentage of spontaneous recoveries is in reality very small. Such recovery occurs within three weeks if at all. Birth palsy is due to nerve injury varying from overstretching of the brachial nerves to complete tearing or avulsion of the roots and involving one or two nerves or the entire plexus. An injury of this kind results in paralysis of groups of muscles and secondarily in subluxation of the shoulder, contractures of the unparalyzed muscles, and accommodative changes in the shape of the bones.

On pathologic examination torn nerves and nerve sheaths, torn fascia, and muscle with extravasated blood forming hard cicatricial tissue which prevents regeneration of the nerve are found.

The symptoms of the condition are given in detail. The author advocates early operation consisting of exposure and suture of the affected nerves.

Following the operation the arm should be put up in a position to allow relaxation of the affected muscles, i. e., in external rotation and abduction. The head should be held by the hand and the arm should be supported by the other hand.

"I have been thinking about you a lot lately," she said.

The author has operated on 70 cases. There were 3 deaths, only 1 of which might be attributed directly to the operation. Taylor does not claim that absolutely perfect physiological recovery will follow the operation but does claim that it will

$$m_{\pi^+} = 139.57 \text{ MeV}, \quad m_{\pi^0} = 134.98 \text{ MeV}, \quad m_{\pi^-} = 139.57 \text{ MeV}.$$

excellent

B. H. MOORE.

Benito. The same I feel in me.

1920 7, 121

Since the fall of 1917, and especially since that of 1918, there have developed in Prussia numerous cases of a bone disease which resembles the more

severe forms of rickets, late rickets, and osteo-

malacia. While the reports do not indicate the entire extent of the condition, they show that the communities most severely affected are the larger cities and industrial centers.

On the basis of the ages of the patients the disease may be divided into three fairly distinct types. The first and largest group of cases are those of infants and children under 5 years of age. Most of the infants are bottle fed but breast-fed infants are also affected. Even among the better classes in which infant welfare work is done severe cases of rickets have been rather frequent. The clinical picture is characterized by pain in the bones upon movement, softening, curving and increased friability of the bones, and craniotabes. In the more severe cases it is possible to bend the long bones manually. Children affected do not learn to walk until late, sometimes as late as the sixth year. Those between the second and sixth years of age usually forget how to walk.

The second group of cases are those of children between 14 and 19 years of age. Children between 6 and 14 are rarely affected. The clinical picture of this type is that of late rickets. It is seen most often in males whose bones are overtaxed by much walking, standing for long periods of time, or the carrying of heavy burdens. It therefore occurs principally in the industrial centers. Females are affected only rarely as few are engaged in these occupations. In the first stages pain develops in the overloaded bones but disappears during rest. Later, thickening and curvature of the bones result and pain is felt when pressure is exerted over the epiphyses. The X-ray picture shows ragged, indistinct epiphyses and a lighter area at the ends. In severe cases fractures occur without apparent cause and heal usually with the formation of a pseudarthrosis. In such cases operations on the bone give poor results.

1

may occur even while the patient is in bed

The disease is due undoubtedly to the effects of the war blockade which restricted the supply of nourishing food. To overcome it better food is

essential, especially food rich in fat and albumin. Calcium, phosphorus, arsenic, and cod-liver oil are of value. Some authors favor injections of

are of value. Some authors favor injections of adrenalin. The treatment should include also rest in bed, fresh air, sunlight, artificial heliotherapy, salt baths, and exposure to the ultraviolet rays.

KEATNS (Z).

KRAUS (Z).

the nerve or ganglion accurately. If the needle is properly engaged, a few drops of 2 per cent novocaine will anesthetize the field of distribution of the nerve.

The author states that the results obtained by alcohol injections are very satisfactory. The relief from pain rarely lasts less than twelve months and in the majority of cases continues from two to three years. One patient has been free from symptoms for nine years after injections into the nerve only.

T. D. MOORE.

Carter, W. W.: Humped, Hooked, and Bulbous Noses; Their Etiology and Treatment. *Med Rec*, 1920, xcvi, 872

The aquiline nose in its exaggerated form constitutes a deformity which may be corrected only by operation.

The traumatic variety of this deformity, frequently seen in football players, is caused by an overgrowth of cartilage and bone. The hereditary variety is due to upward growth of the nasal septum. By this upward growth the bridge of the nose is forced out, and, as a consequence, the tip sags downward and becomes hooked.

family tendency toward a hooked nose a nose of this type has not developed following the resection.

nose is too long, a fan-shaped piece removed from the septum will shorten it. After the operation the nasal cavities should be lightly packed with sterile vaseline gauze and a properly padded copper splint should be applied and left on for four or five days.

The author has operated upon 50 cases by these methods with most satisfactory results.

M. H. HOBART

Eby, J. D.: The Principles of Orthodontia in the Treatment of Maxillofacial Injuries. *Internat. J. Orthodont. & Oral Surg*, 1920, vi, 273

The author describes a number of cases treated at the Walter Reed General Hospital at Washington, D. C., where the principles of orthodontia were applied in the treatment of injuries to the jaws and face. He gives two classifications of fractures of the mandible.

1. The French classification, according to which the mandible is divided into sections to which the depressing and elevating muscles are attached. This divides them into: (1) interdepressor, (2) pre-elevator; (3) interelevator; and (4) post-elevator fractures.

2. A classification by which the mandible is divided anatomically. This classifies fractures into Classes 1, 2, and 3, or fractures through the symphysis, the body, and the ramus respectively.

In his description Eby uses the first classification mentioned and illustrates by roentgenograms and photographs fractures through the various regions

of the mandible and similar cases in which there was loss of substance at the site of the fracture in those regions. In the treatment of the latter group various methods of grafting were employed, such as the use of grafts taken from one stump and wired to the opposite stump, grafts taken from various parts of the body, such as the anterior superior spine of the crest of the ilium, osteoperiosteal grafts from the tibia, rib grafts, and an ox-bone graft.

LOUIS SCHULTZ

Waldron, C. W., and Risdon, E. F.: Mandibular Bone Grafts. *Internat. J. Orthodont. & Oral Surg*, 1920, vi, 319

The authors advocate the use of mandibular bone grafts in cases of pseudarthrosis due to loss of bone with consequent separation of fragments. The operation should be delayed at least six months or more after the complete disappearance of all inflammatory phenomena. The bone grafts should include both periosteal and endosteal surfaces so that full advantage may be taken of their osteogenic activity and osteoconductive properties. Dental splints with interlocking devices should be cemented to the teeth at least one week before the operation.

Rectal oil-ether anesthesia supplemented when necessary by ether administered intrapharyngeally should be employed. The ends of the fragments should be exposed and the periosteum elevated from their external, internal, and inferior surfaces for a distance of about 2 cm., care being taken to avoid perforation into the mouth cavity. The fragments must be trimmed back to bleeding healthy bone, a ledge being left above which will afford additional surface contact between them and the graft. This is best accomplished by the use of Friesner's mastoid rongeur forceps and Lane's gouge forceps. Holes should be drilled in the fragment and two short lengths of Belgian iron wire passed through them. A graft of suitable size may be cut from the tibia, a rib, or the iliac crest. Holes should be drilled in each end and the graft wired to the fragments. The authors prefer a graft obtained from the iliac crest. After the wound is closed the patient must be kept on a liquid diet for a few days. The splints should be left in position, keeping the mouth closed, for two months. If the posterior fragment is not controlled the mouth must be kept closed for three or four months. During this period, however, the splint pins may be removed from time to time and the mouth opened for examination.

LOUIS SCHULTZ

Butler, T. H.: The Ring Magnet. *Arch. Ophth.*, 1920, xlv, 247.

The author describes the ring or Innenpolmagnet and its use, discussing also its several advantages . . . three years . . . more generally . . . rapidly displacing the Haab type.

solution, or sterilized gelatin. The results of these methods, however, are not at all constant or certain. As in the Helferich method, the danger of infection is great, especially if the resected joint is placed in flexion, which is absolutely necessary to obtain good function. The danger may be ameliorated somewhat by cleansing the cavity with a 5 per cent solution of tincture of iodine.

The after-treatment should consist of flexion for from ten to fourteen days, extension for three or four days, and then flexion during the night and extension during the day followed by active motion. The patient should be allowed up after four to six weeks with or without the application of the Scharnier apparatus.

Very old ankylosis is not a contra-indication to the operation. KLOSE (Z)

Peltesohn, S.. A Contribution to the Knowledge of Congenital Foot Deformities (Beiträge zur Kenntnis der angeborenen Fussverbildungen). *Berl klin Wchnschr.*, 1920, lvi, 111.

The author gained valuable information regarding the etiology of congenital foot deformities during the war. This paper deals with a case of metatarsus varus congenitus and a case of a special type of metatarsus adductus. The X-ray demonstrated spina bifida occulta in both. This condition was present also in 6 other cases of congenital foot deformity.

During his investigation the author gained the impression that spina bifida occulta is present in the majority of cases of congenital club-foot. His conclusions are as follows: Spina bifida occulta associated with congenital foot deformities, and especially with congenital club foot is much more common than has been believed hitherto. Whether there is any more definite relationship between the two conditions can be determined only by further investigations on large numbers of cases. In cases of both acquired and congenital foot deformities in which the etiology is doubtful the demonstration of a spina bifida occulta by means of the X-ray may be the deciding factor. BELA DOLLINGER (Z)

FRACTURES AND DISLOCATIONS

Girdlestone, G. R. The Care of Crippled Children. *Brit M J*, 1920, i, 697.

A study of 1,001 cripples more than 16 years of age made by the Birmingham Education Committee demonstrated that only 111 were able to perform remunerative work at home and 531 were unable to do any remunerative work whatever.

A plan is suggested whereby cripples may be cared for in hospital schools erected and maintained under government supervision. The benefits derived from such a plan would be manifold. Many children would be reached who, under the present system, are receiving little or no attention because of their lack of financial means or their remoteness from hospital advantages. A great number of cripples

who are confined in industrial homes, work-houses, or infirmaries, or are otherwise burdens upon the state and society, would be transformed into producers and thereby rendered useful assets to the state.

By such a plan a given territory would be divided into districts and in each district a "residential school" would be established in addition to the hospital school. Here children who are severely crippled or who live far from a school would be cared for. When discharged from the hospital such children would remain under the supervision of the orthopedic surgeon and continue to attend the school and workshops.

The author suggests that in England and Wales the plan can be carried out best through the co-operation of the Ministry of Health and the Board of Education. In London and other large cities each orthopedic hospital or general hospital with an orthopedic department should care for the children in its own section of the city and should have beds for crippled children from the country.

The types of cases to be cared for fall into three groups: (1) deformities, (2) paralyses, and (3) surgical tuberculosis and other affections of the bones and joints.

An ideal hospital school for crippled children should have open-air wards in the country and should be built on dry subsoil and near a main town. It should be affiliated with a good general hospital and equipped with a sufficient number of beds. The unit should be of manageable size, perhaps not over 200 beds, and should have offices in which the administrative end of the work may be cared for. In construction and design it should be semi-permanent and of the bungalow type.

Architectural plans for the erection of such a hospital, suggestions regarding its equipment and its maintenance under government supervision, and an estimate of expenditures necessary for its successful operation are given in detail.

T. D. MOORE.

Rauenbusch: Conservative Treatment of Severe Gunshot Fractures (Tratamiento conservador de las fracturas expuestas graves por armas de fuego). *Rev de la Assoc med argent*, 1919, xxvi, 605.

This article is based on the author's experience in the war zones of Poland, France, and Belgium. The treatment of the average case of gunshot fracture in which the patient does not react from shock was to shave the skin, cleanse the parts with gasoline, and rovide freely, under anesthesia if necessary. Free incisions were sometimes made into the wound. All foreign bodies were removed. Bone fragments loose in the tissues were removed when free from periosteum, but if the periosteum was attached the fragments were left in place.

After amputation. All damaged and hopelessly lacerated tissue was freely incised.

In some cases of cervical rib treated by operation dense postoperative scar-tissue formation has given rise to all the previous symptoms of cervical ribs and in some instances these symptoms are even more severe than before the operation.

Reports in which accidents are given as a cause of the symptoms of cervical rib are frequent in the literature. Muscular effort, bony compression, inflammation, and, in elderly persons, change in posture with forward or lateral bending of the vertebral column associated with tissue changes may all give rise to symptoms when either cervical ribs or enlarged transverse processes are present.

In most cases of cervical rib the symptoms develop between the ages of 20 and 30 years, but age is of little importance in diagnosing the condition unless the associated lesion and the cause of the symptoms are known.

Cervical ribs are found more commonly in females than in males, but there is a divergence of opinion as to the exact ratio.

The majority of authors are agreed that as a rule cervical ribs are bilateral. In Honeij's cases, however, the same changes were rarely seen on both sides. This fact and the fact that the symptoms are usually unilateral would seem to indicate that the general opinion is incorrect.

Keen states that a cervical rib is only an abnormal deviation of a normal portion of a vertebra. In the cervical, the lumbar, and even in the sacral region there is a representation of that which in the dorsal region is fully developed into a normal rib. It is well known that the variations in the last three thoracic ribs and the transverse processes of the lumbar region are greater than those in the cervical region. Therefore it has been thought that the law of compensation plays a part, so that, broadly speaking, when the twelfth thoracic ribs are absent seven cervical ribs are provided.

stage in the progressive change which is seen to occur throughout the animal kingdom. A gradual but marked reduction takes place in the total number of ribs as we rise in the animal scale.

Gruber divides cervical ribs into four classes mainly according to size, and therefore growth, as follows:

Class 1. Those consisting of only a node which does not extend beyond the lateral dimensions of the transverse processes of the vertebrae

Class 2. Blunt projections of bone 4 or 5 cm. in length.

Class 3. Ribs which extend far enough forward

which he divides into two classes: those which may be considered cases of true cervical ribs, articulating

like the thoracic ribs with the transverse processes, and those which may be considered cases of only rudimentary ribs. The first group includes 9 cases. In 1 case a positive diagnosis was made. In 3, there were no indications or symptoms of cervical rib even after the condition had been determined. In the remaining 5 cases the diagnosis had not been made although some of the symptoms were referred to the cervical region. In 3 of the cases a diagnosis of questionable pulmonary tuberculosis was made in addition. In 2 cases the question as to whether the rib was a rudimentary first thoracic rib was debated for some time.

Twelve cases belonged to the second group. Two are of especial interest. In 1, the rib was removed at operation. In view of later findings, it is not probable that the symptoms thought to be caused by pressure on the nerves by the seventh cervical ribs were due to the rudimentary processes. Malignant disease was found, the tumor mass being situated in the right axilla where it exerted pressure on the brachial plexus. Three patients gave a history of a tingling sensation in the left hand and numbness, but a diagnosis of cervical rib was not made or justified.

In 2 cases a cervical rib was suspected and in 1 of these the hands were cold and blue as far as the wrist and lacked sensation. The patient was 24 years of age and there was no history of trauma.

One patient, a man of 24, was injured while wrestling. An injury to the shoulder was suspected but radiological examination showed the joint to be within its normal limits.

In the last 5 cases of the series there were no symptoms, the condition being found on examination of the lungs in 4 cases and on examination of the vertebral column in the other.

Seventeen cases are reported in which the presence of cervical ribs was suspected as they presented more or less typical symptoms and histories. The radiological examination, however, did not reveal such a condition.

Another group of cases reported were 13 cases of thoracic rib anomalies. None of these patients had symptoms.

The author describes a specimen cervical rib which is in the osteological collection of the Yale School of Medicine. Its length is 9 cm., but the ventral 4.5 cm. are fused with the upper surface of the first rib, the fusion beginning 1 cm. anterior to the tuberosities.

In the posterior rib is demarcate
ning almost its entire length, and medially by a shallow groove 1 cm. in length at the ventral end. The body of the rib, which posteriorly is 7 mm. in thickness and 13 in breadth, tapers ventrally and reaches the posterior edge of the groove for the subclavian artery. On the upper surface an oblique groove, 2 cm. in length, runs forward from the tuberosity to the medial edge. The head of the rib begins 7 mm. laterally to that of the first rib and is

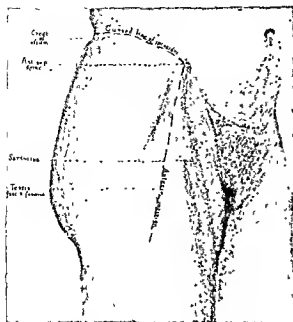


Fig. 1 Line of incision for subperiosteal approach to the hip joint

areolar tissues. This was removed, together with a thin fibrous cord, the remains of the teres ligament. The joint capsule was represented by an extremely thin, overstretched membrane which was peritoneum-like in thickness. The acetabulum barely admitted the tips of the first two fingers (Fig. 2). Skeletal traction was very carefully obtained at intervals, and the pulsation of the femoral artery was watched.

The head of the femur was gradually brought down to the level of the acetabulum. There was no evidence whatever of circulatory disturbance although the traction seemed extreme. Traction followed by equally gradual abduction engaged the head at the edge of the acetabulum. With a chisel, a 4-in. curved lip of bone was turned down and outward approximately 1 in. above and behind the acetabulum to form a curved roof about 1 in. in width and thickness (Fig. 3). A tibial graft 3 in.

The trochanter was then replaced and held with a kangaroo suture, and the relaxed capsule reefed with two similar mattress sutures. The soft tissues were closed with chromic catgut without drainage. The Steinmann pin was removed and a long spica applied from the toes to the nipple-line in 30 degrees abduction.

The convalescence was uneventful. The plaster spica was changed to a short spica at the eighth week. At the end of the sixteenth week all fixation was

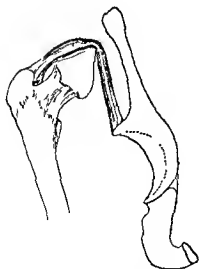


Fig. 2

Fig. 2 Schematic drawing of a persistent paralytic dislocation. Note the overstretched atrophied capsule and trochanteric muscles, the deficient atrophied acetabulum, the distorted femoral head. The dotted line indicates the approximate depth of the normal acetabulum.

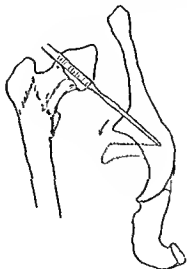


Fig. 3.

Fig. 3 Turning down a superior bony lip to form an efficient acetabular roof.



Fig. 4

Fig. 4 The roof turned down and a notch prepared for the tibial transplant.

catgut, but this procedure is not very important as the stitches soon give way. Deep sutures are used to close the skin in order to prevent the formation of a sucking wound.

Dressing on the following days will show that the wound is bulging as the mixture of pus, iodoform,

and as much fluid is extracted as possible. Bacteriological examination will show a daily decrease in the number of organisms.

The author has treated by this method nine patients whose ages ranged from 55 to 2½ years. Pneumococci were found in all of these cases except two. Two were cases of mixed pneumococcal and staphylococcal infection and one a case of old tuberculosis. The only failure in the series occurred in the case of a very much debilitated man, aged 44, who had two big abscesses pointing under the skin. In this instance the exploration done by the hand was insufficient at the re if open.

The eight other patients made rapid recoveries. The temperature fell at once and the pulse and respiration came down gradually. The duration of the condition varied from two to six weeks after the resolution of the primary pneumonia.

The author suggests further that a soft piece of folded rubber be inserted to permit the gradual evacuation of the paraffin and iodoform. This will do away with the daily use of the aspirating needle and prevent air from entering the pleura while it allows the exit of the pleural contents. Since the idea occurred to him, however, Hatbaway has not had an opportunity to test the procedure.

M. R. HOON.

Horsley, J. S.: Benign Tumors of the Breast. *South M J.*, 1920, xlii, 336.

The education of the public in recent years regarding cancer has very considerably changed the types of tumors of the breast seen by the surgeon. Formerly benign tumors were not observed frequently and by some surgeons even they were viewed with suspicion. Women are now going to their physician or their surgeon soon after they discover a lump in the breast. They have learned that ca-

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of
because many benign tumors of the breast are potentially malignant and the chances of curing mammary cancer decrease with its growth.

One of the chief difficulties in classifying tumors of the breast is due to their peculiar nature which is dependent upon the histologic structure of the breast and the marked changes it undergoes during the life cycle. At birth the gland consists simply of an aggregation of radiating ducts with club-shaped

extremities but no real acini. The epithelium of the ducts is frequently in an active state of proliferation which may cause swelling and pain. No histologic change takes place in the gland until the age of puberty, when acini begin to develop. The breast then enlarges and becomes tender and firm. The epithelial elements in the acini and ducts grow rapidly and the ducts become intimately surrounded by a type of connective tissue which Warren has described as clear, almost transparent, rich in nuclei, and in marked contrast to the interstitial connective tissue of the gland. It is this periductal connective tissue which enters largely into many of the benign tumors, and because of its intimate association with the epithelial elements the latter are always present even though the periductal fibrous tissue predominates. At pregnancy lactation produces another marked change in the breast, and at this period the epithelial growth in the gland is at its height. The next change is that which accompanies the atrophy and degeneration of age and disuse. This change usually begins about middle age and occurs particularly in the acini and the interstitial tissue.

Practically all benign tumors are well encapsulated and this encapsulation is one of the characteristics by which they may be differentiated from malignant growths. A malignant growth, however, may develop in an encapsulated benign tumor and extend through the capsule into the breast tissue.

Benign tumors may be classified as the "blue dome cyst," which was described by Bloodgood and is undoubtedly one of the features of chronic cystic mastitis; periductal fibroma, periductal myxoma; fibro-cystadenoma; papillary cystadenoma, and chronic cystic mastitis.

In operating on benign mammary tumors the growth with the adjacent breast tissue should always be removed for matrices of other tumors often lie in the mammary tissue near a benign tumor. The breast should be reconstructed by layers of sutures of plain catgut and the skin carefully approximated. It is best to make the incision directly over the growth, particularly if there is doubt as to whether or not it is cancerous.

The Warren operation of incising the breast along its lower margin, dissecting it from the pectoral fascia, and removing the tumor from beneath should be undertaken only when the growth is quite plainly benign. Even in such cases, however, mistakes in diagnosis occasionally occur.

The author reports 55 cases of benign tumors of the breast operated on between October 23, 1908 and September 3, 1919, approximately eleven years. As in 4 of these cases there was no microscopic section, only 51 are included in the analysis. The average age of the patients was 33 years. All of them were operated upon for a benign tumor and in all of the cases except 3 the operation for the benign tumor was the chief or the only surgical procedure. In 1 case a hysterectomy was done and

rior surface of the thigh and leg. A note is cut in the upper wider adhesive and the lower adhesive splint is pulled through this opening. The ends of the adhesive strips are hooked to the ends of the steel apparatus. When the wooden apparatus is employed a small piece of wood is inserted at the end of the adhesive strip and a cord is tied to it. This cord is carried over the pulleys and attached to the turnbuckles.

The traction is constant and can be accurately adjusted. The apparatus may be used for fractures of the patella, olecranon, and os calcis, and in any case in which traction is necessary to overcome the separation of bone fragments.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Grégoire, R. • Obturation of Bone Cavities by Muscle Strips (Obturation des cavités osseuses par lambeaux musculaires) *J de chir*, 1919-20, xv, 593

which were surrounded by a thick muscle sheath. Such cavities are the most difficult to close by epidermization, but in the cases reported closure was obtained in from twenty-one to thirty-five days.

A properly cut muscle strip holds well and without traction in a cavity. The war has disproved the theory that the removal of a strip of muscle compromises the functioning of a limb. It is not known whether the muscle strip degenerates into fibrous tissue or undergoes osseous transformation, but the cavity fills and suppuration ceases, which is the object sought in the treatment.

The cavity should be cleared of sequestra, curetted, trimmed, and filled at the one intervention. The bone should be trephined sufficiently to permit the removal of all the sequestra and the filling of the recesses. Two radiographs should be taken at perpendicular axes in order that the site of the cavity in relation to the thickness of the bone may be determined exactly. The muscle strip should be cut long so that it will fit into the cavity easily without traction and its root should be large so that it will have sufficient nourishment. The fact that retraction will occur must be taken into account. As a rule the patient will be able to execute all movements and cicatrization will be complete at the end of four or five weeks. W. A. BRENNAN

Massey, D. • The ...

The literature shows that during the war surgeons were not disposed to use tenoplasty in the treat-

ment of definite paralysis. Before the war this method was widely employed in the treatment of infantile paralysis, but paralysis due to nerve section was rarely treated by either myoplasty or tenoplasty. In Germany, however, Perthes reported 26 such cases in which excellent results were obtained by tenoplasty.

Tendon transplantation is indicated: (1) in cases of old injuries in which no nerve operation has been done, (2) in cases of old injuries in which neurotomy has not been effective, and (3) in cases of recent injuries when the nerve lesion is too extensive to be followed by regeneration. The first object of operation is to re-establish the extension of the carpals and metacarpals and the extension of the first phalanx on the metacarpal. This having been realized, the extension of the second and third phalanges will be facilitated by the interossei and lumbricales muscles.

The author reviews the various techniques which have been employed in the treatment of paralysis

of the extensor tendons with transplantation of the tendons of the great palmar, the lesser palmar, and anterior ulnar, brought together *en fronde* on the extensors of the fingers and thumb. The hand, in forced supination, is placed flat on a small table and a horse shoe incision is made below the fold of flexion of the wrist, care being taken to avoid cutting the lesser palmar and also the anomalous arteries which are frequently found in this region. The great palmar is freed at the level of its insertion at the metacarpal base, the anterior ulnar being freed at the same time. After the liberation of the three tendons the hand is turned so that the dorsal surface is upward. A long dorsal incision is then made descending along the back of the hand as far as the middle third of the metacarpals and exposing the dorsal ligament of the carpal and the extensor tendons where they branch from the dorsal ligaments. The incised strip is then turned back and the tendon

ulnar. With a Kocher forceps passing between the ulnar and the tendon of the posterior ulnar muscle the anterior ulnar tendon is drawn through to the posterior surface and sutured to the three shortened internal tendons. Similar manoeuvres are executed with the other tendons. During the entire operation extension of the hand and first finger is maintained by an assistant.

A wire splint is used. Careful mobilization may be permitted by the eighth day. An important factor in the treatment is massage.

While the tendon transplantation described does not restore normal movement and suppleness, it

colored, greenish, brown, or even black. The breast tissue between the cysts is distinctly fibrous, decidedly whitish in color, and tougher than normal. These gross changes are quite unlike those of a typical carcinoma, which is gray in appearance and much harder, creaks under the knife, retracts and is concave after section, and exudes an abundant fluid when it is scraped.

Ordinarily the diagnosis of chronic interstitial mastitis is not difficult because of certain fairly constant characteristics. It occurs in men only rarely. Judd reports 11 cases in men in a series of 218 cases observed at the Mayo Clinic. The author has observed 3 cases in men aged 29, 45, and 65 years, respectively.

The majority of cases are those of single women or married women who have been sterile or who have not nursed their children and have reached the menopause. In 100 consecutive cases from the author's clinic the age incidence was as follows: 10 to 19, 3 cases; 20 to 29, 11 cases; 30 to 39, 24 cases; 40 to 49, 48 cases; 50 to 59, 8 cases; 60 to 69, 4 cases; and 70 to 79, 2 cases.

All of the author's patients complained of pain or at least a sense of discomfort in the breast. In fact this is the most dependable symptom of the disease and one that in the majority of instances leads to the diagnosis. Pain is especially in the breast under dis-

carcinoma is painless. The pain of chronic mastitis is usually confined to the breast, though it may ex-

Judd states carcinoma as almost always aggravated at the menstrual period. Not infrequently there is more or less discharge from the nipple. This discharge is often a clear watery or straw-colored serum which exudes from the nipple

cystadenoma.

On examination the affected breast is found to be a trifle larger than the other. Prominence of the superficial veins is practically a constant sign. Instead of one definite tumor mass as in carcinoma, there are several irregular masses which are tender on pressure and not adherent to the overlying skin. The axillary glands are often enlarged and tender.

In the operative management of chronic interstitial mastitis the potentialities of the condition must be borne in mind and too much rather than too little should be done. It is the author's belief

have a frozen section of the portion of the gland which appears most diseased to the naked eye examined immediately by a competent pathologist.

It is important to consider the patient's age in deciding upon the type of operation to be performed. In young, unmarried women whose chance for happiness would be lessened by the removal of the entire gland, it is justifiable to do a resection provided the facts are made known to the patient and she consents. This plan of course is to be followed only when the pathologist reports the growth benign.

Rodman has removed a large part of the gland subcutaneously, several times using the same incision as that employed in plastic resection by Warren's method. In this way he avoids disfiguring the patient and interfering with subsequent lactation.

Whenever it is necessary to remove the entire gland he uses the same technique as that employed in amputating the breast for carcinoma. This he believes is advisable when the patient is over 35 years of age.

G. W. HOCHREIN

Calcagno, B. N.: Mammary Cancer in Man; Extirpation and Axillary Dissection under Local Anesthesia (Cancer del mamelon en el hombre. Ablación y vaciamiento axilar bajo anestesia local) *Rev de la Asoc med argent*, 1919, xxxi, 538

The cancer described by the author was of the scirrhus type and began in the nipple. It was due probably to functional inactivity and mechanical irritation. The patient was of advanced age and the cancer of fairly rapid development, spreading by way of the lymphatics.

The problem of surgical intervention was complicated by the question as to the type of anesthesia which would be most advisable. The patient was over 70 years of age and it was thought that neither his heart nor his lungs would tolerate a general anesthetic. It was decided therefore to use infiltration of a local anesthetic in both the dissection of the brachial plexus and the removal of the primary focus. The anesthesia of the brachial plexus was induced according to Hirschel's method. The operative field was surrounded by two zones of injections, one intradermal and the other subcutaneous. Some of the solution was introduced also beneath the pectoral muscles.

Extirpation of the tumor and axillary dissection were done according to Halsted's method. The axillary tissue and the primary neoplasm were removed in one mass without fragmentation. The incision was partly closed near the center and large open areas were left at both ends. In the axilla and at the level of the nipple two tubes, each containing 100 mg of radium, were inserted into the wound and left in place for twenty-four hours.

In the period of convalescence there was an intense congestion of the left lung base. The temperature, however, returned to normal in four days. When the radium was removed an intense redness of the neighboring skin was noted and for a few days there was a fetid secretion. Later the tissues sloughed on both sides of the wound and healing followed in due time.

W. R. MEEKER

cannot be pronounced definitely cured before about three years

Tuberculosis of the spine is treated in two ways: (1) rest in bed on a Bradford frame and Buck's extension followed by the application of a plaster of Paris jacket and a spine brace, and (2) operation. The operative method consists of the insertion of a bone graft from the tibia into the spine and the use of a spine brace for about one year. Children under 8 years of age are not treated by operation

The advantages of the use of a bone graft is that it not only but may is taken f very slow being un.

and the growth being anterior to the bone graft, the kyphos gradually straightens

Infantile paralysis is treated early for the prevention of deformity. If deformity has already resulted the treatment must consist of correction and fixation in the corrected position. This is

old The use of artificial tendons and ligaments of silk has been found less satisfactory than other methods of treatment

The author believes that more can be accomplished by operations on the muscles than by operations on nerve trunks

In congenital dislocation of the hip the best method of reduction is that which was devised by Davis

Congenital and acquired wry neck has been treated by open operation, the sternal or clavicular portion of the sternomastoid muscle or both being divided as the case requires. The head and trunk are enclosed in plaster with over-correction. The child is allowed out of bed the next day and the plaster is removed in three weeks

Knock-knees and bow-legs are treated by osteotomy if the child is over 4 years of age, and by braces if it is less than 4 years of age

Hallux valgus is treated by removing a wedge of bone from the inner side of the first metatarsal bone just behind the head and doing a subcutaneous

Acute epiphysitis and acute osteomyelitis in children should be operated upon as soon as possible. An incision and one or more trephined open-

ings into the marrow cavity or epiphysis should be made.

Arthroplasty is performed to restore mobile function to an ankylosed joint. The operation is

ical device causing upward pressure upon the ball and heel of the foot and downward pressure upon the dorsum. D. H. LEVINTHAL.

Marshall, H. W.: The Use and Abuse of Mechanical Supports in Orthopedic Conditions. *Boston M. & S. J.*, 1920, clxxii, 497.

All mechanical supports are reliable and effective when properly used, but most ineffective when improperly used or when worn for too short or too long a time. Also such orthopedic measures as massage, manipulation, baking, early passive motion, etc., are of inestimable value when properly handled, but disproportionate use of any single method to the exclusion of others is bad practice.

Braces should not be condemned dogmatically because of their limitations; their apparent inconveniences should not always be regarded as a sufficient reason for discarding them. Metal arch supports, for instance, are of value in their place, but allowing them to be worn too long is a fault as foot exercises, etc., must be used later. Sprains of the ankles, knees, and elbows must be protected and motion properly limited.

Industrial accident cases present peculiarities of their own because the injured workman drawing compensation differs from the man not drawing

fort outweighs all the mechanical advantages. Baking and massage may be employed much more successfully. By careful management patients considered to have total permanent disabilities may sometimes be transformed into useful wage-earners. Braces may be condemned by their wearers and soon discarded because they are uncomfortable, but in the long run may prove much cheaper and more quickly effective than a series of painful manipulations.

The requirements of the individual case are always to be considered, and in the final analysis the best result comes from the successful combination of protective treatment and operative and manipulative surgery.

In conclusion the author reports several cases which illustrate his contentions. R. G. PACKARD

creased in intensity by exertion, but is fairly constant. The amount or the severity of the pain apparently has no relation to the size of the projectile, to any previous operative procedure, the presence of empyema, restriction of the diaphragm, or the physical signs noted. It has been observed, however, that in cases of localized adhesions along the track of the missile, pain and tenderness are especially noticeable.

Dyspnoea is variable in its manifestations. It may be present all the time or come on with exertion. The degree of distress does not always correspond to the deformity of the chest or the amount of physical disability.

Cough, which is frequent, is due to sinuses leading to the pleural cavity or lung, infection around the foreign body, bronchiectasis, or emphysema. Haemoptysis may occur but is not severe. The expectoration, which may be frothy, abundant, purulent, and offensive, ceases only after the removal of the projectile. There is frequently a history of chilliness and some rise of temperature in the evening for two or three days at a time. Palpitation and pain over the heart have been noted.

The author believes that the danger of pneumothorax has been greatly exaggerated. Air is introduced slowly into the pleural cavity and the only effect produced is a temporary cessation of respiratory movements. The only serious risk is the possibility that the opposite pleura may be opened, a double pneumothorax being thus produced.

In many cases pleural adhesions are formidable and their removal leads to the belief that they might account for much of the discomfort. In

effected if possible, and if oozing occurs, drainage may be instituted for not longer than thirty-six hours.

Ether has been the anæsthetic chiefly used, with a preliminary injection of morphine, scopolamine, and atropine. Deep anæsthesia is continued and oxygen is given under the mask by means of a rubber tube. The respiratory rate is about normal but the excursions are shallow. The essential point is to secure anæsthesia of a sufficient depth before the chest is opened; otherwise a cough ensues.

In spite of various criticisms the X-ray has proved to be of value during the operation. The open method must be used in approaching the hilum or heart. The X-ray method can not be employed when the projectile is too large to be extracted between the ribs. The X-ray is the only accurate means available to determine the location of the foreign body. This is done both by plates and screen examinations.

The advisability of operation is dependent upon: (1) the persistence of subjective symptoms, (2) the conditions of the foreign body and the lung surrounding it, and (3) the conditions of the pleural cavity.

The method of Petit de la Villéon is used in conjunction with the X-ray both in localizing the foreign body and in its removal. A small incision is made and a special forceps with a blunt end and long parallel blades on one side of the hinges and short "crocodile-jaw" blades on the other is introduced. The guidance of the instrument depends upon the X-ray. When the image of the blades coincides with that of the foreign body the "crocodile-jaws" are opened and the foreign body is grasped and withdrawn slowly. Many theoretical objections to this operation have been met by experience, and the procedure of

are: (1) the proximity of the missile to the lung hilum, (2) the proximity of the missile to the heart, (3) the size of the projectile, (4) suppuration around the missile, and (5) the presence of other foreign bodies than that shown on the screen.

Marion's method avoids the production of a pneumothorax by fixing the lung to the parietal pleura before an incision is made in the lung. This is its only advantage and it is not widely employed.

Duval's open operation is the most extensive and most commonly used of all methods. The exposure is made by incising through to a rib, preferably the third, fourth, or fifth, and after the costal cartilage has been cut through with a dove-tail incision, retracting the rib with a gauze strip. Pneumothorax is produced slowly by making a small incision in the pleura. Respiratory embarrassment is thus avoided and free ventilation of the lung is maintained.

Gentleness in handling the lung lessens the subsequent respiratory distress. The wound must be left dry as a small amount of oozing will cause embarrassment in breathing. The complications that may occur are hæmoptysis, respiratory distress, emphysema (surgical), and infection of the wound or pleural cavity.

Operations on the root of the lung are particularly hazardous because of its extreme vascularity and fixity and the difficulty in distinguishing a foreign body from a bronchus.

In operating on the mediastinum special methods have been devised to give ample access:

1. LeFort's modification of Delorme's method. This consists in making a costal flap with an external hinge and raising the flap by simple elevation or by causing a greenstick fracture. The method provides ample light and permits complete exploration of the thoracic cavity.

2. LeFort's method by which an intercostal incision is made and the supra- or subjacent costal cartilages are divided. This gives a working space of 12 cm. The incision should be made slightly below the level of the foreign body to be extracted.

3. Duval's method, which consists of turning upward and outward a flap comprising the clavicle, the first rib, and the upper outer segment of the manubrium sterni. This gives approach to the arch

less than one year, in 24, for from one to two years, in 21, for from two to three years, in 13, for from three to four years, in 10, for from four to five years, and in 1, for nineteen years

Twenty-two patients gave a history of trauma to the area involved, 78 did not mention an injury. Twenty-seven had had tuberculosis in other parts of the body such as the lungs, joints, testicles, peritoneum, etc., before symptoms were manifested in the spine. Symptoms of paraplegia were present in 7 cases and were not considered contra indications to operation.

definite abscesses, 9, suppurative sinuses, and 78, definite deformity. Previous treatment, which consisted of the application of casts and braces, had been unsatisfactory. In 3 of the cases bone grafting had been done elsewhere.

Early diagnosis and careful prolonged care of the patient under competent supervision are essential for a favorable outcome when tuberculosis attacks the spine. Although conservative treatment has given a fair percentage of favorable results, a definite group of cases remains in which the surgical fusions of Hibbs and Albee have shortened the period of disability, prevented further deformity, and given more certain relief than conservative measures. Thus these operations have been placed on a sound surgical foundation in the armamentarium of treatment.

The fact that the spinous processes and laminae are seldom involved in tuberculous spondylitis makes the fusion operations practical. It is to be remembered, however, that the disease process is merely immobilized by such surgery and the deformity remains, that the patient is tuberculous; and that there is probably a focus in another part of the body. Nature is slow to produce ankylosis, and external splinting to immobilize completely is impossible. Surgery, on the other hand, gives the best fixation in a comparatively short time.

The most favorable results are to be obtained by a proper selection of patients to be operated on and continuance of the conservative treatment after operation until, in the judgment of the surgeon, the disease process has been arrested. The bone graft used in the Clinic cases was curved to fit the deformity. Recumbency, rest, and general physical hygiene are essential in all instances. Patients under 5 years of age and adults who present complications, such as suppurating sinuses and pulmonary tuberculosis, should be treated by means of the Bradford frame for a period usually of from six months to one year, or until the disease has been arrested. This should be followed by the use of plaster of Paris casts applied so as to relieve the diseased area of weight-bearing and give the spine as much fixation in extension as is possible. Still later a Taylor spinal brace should be applied. In some instances, when

the general condition has improved but the symptoms of spinal disease remain unarrested after such treatment, a bone-graft operation may be resorted to with benefit. The Calot jacket and suspension jury masts are useful, especially when the disease attacks the upper dorsal and cervical spine. Many patients have been treated by casts and braces which fail to support the weight above the diseased area. The effect of such apparatus is often more harmful than beneficial since they act as restrictors of respiration and add to the weight and discomfort of the already overburdened body. A properly

built to the brackemaker while the latter may be proficient in the making of the brace, the principle and adjustment require a knowledge of the extent of the disease itself.

Recumbency is without doubt the most satisfactory aid to treatment. When the diagnosis is made early, fusion is induced surgically and reinforced later by some means of external fixation, and when general anti-tuberculosis treatment is adopted marked deformity and complication will soon become rare. The Rollier sunshine treatment

lesion in the spine is a local manifestation of a disease process which probably has had its origin in a primary focus in some other part of the body, the general hygienic care of the patient is of the first importance.

A rule with regard to the period of recumbency would be impractical, especially in conservative treatment, since the conditions as to activity, extent, and abscess complications vary greatly at the time the patients present themselves for treatment. It is somewhat difficult to decide when the patient should be allowed to get up after operation, and the judgment of the surgeon varies in different clinics. Usually the patient's relief from pain and desire to move are of value in the decision. When the temperature is normal he may be given permission to sit up after a properly fitted brace has been applied. Later an X-ray should be taken; the amount of calcification and union are of importance in determining the extent of repair. At the Mayo Clinic the period of recumbency and the time on the frame are determined by the patient's condition after repeated examinations; no definite time for conservative treatment is established. After the period of recumbency a cast is applied, and still later, a spinal brace. All the while the patient and his relatives are impressed with the importance of general care and especially of fresh air and sunshine (Rollier). All patients treated by recumbency should be kept in an institution long enough for the

5. It may originate in the ovary or the intestinal most frequent appendix has
7. Early invasion of the peritoneum is characterized by a pebbly appearance
8. In early cases the condition is sometimes cured and at any stage may be inhibited by operation

GASTRO-INTESTINAL TRACT

Burrows, W. F., and Burrows, E. C.: *Common Forms of Gastro-Intestinal Tuberculosis. Internat. J. Surg.*, 1920, XVIII, 142.

Tuberculosis of the gastro-intestinal tract is not a rare disease and we now have a definite concept of the affection and its pathology, symptoms, and treatment. We find that in this affection the disease is localized and associated with an attenuated or bovine form of infection. The author discusses the condition under the following heads:

1. Gastric tuberculosis. Gastric tuberculosis is an uncommon affection because of the acid reaction of the stomach contents, the resistance of the gastric mucosa, and the rapidity of the evacuation of the food from the stomach. When it does occur it is usually associated with advanced pulmonary tuberculosis and is characterized by symptoms of intractable gastric ulcer and marked nutritional disturbances. The prognosis is poor and the treatment is practically that of pulmonary tuberculosis.

2. Peritoneal tuberculosis. This affection is usually secondary to tuberculosis of the pleura, intestines, mesenteric nodes, and fallopian tubes rather than pulmonary tuberculosis. There are three types: the miliary, the caseous, and the adhesive.

In the miliary type of peritoneal tuberculosis the abdomen is doughy and distended. A serous or serosanguinous exudate is found and tubercles are disseminated upon the abdominal and visceral peritoneum. The course of the condition is acute. Surgery is of little benefit.

The caseous type of peritoneal tuberculosis is associated with a bowel-wall involvement and is frequently found in cases of ileocecal tuberculosis in which the process has penetrated the wall of the bowel and formed caseating tumors with matting of the intestinal walls. The course is subacute. In favorable cases in which the lesion is limited to the ileocecal region excision of the mass with anastomosis is sometimes practicable. If it is not, the prognosis is unfavorable.

The adhesive type of tuberculosis of the peritoneum is caused by the passage of attenuated or bovine tubercle bacilli through the lymphatics of the intestinal wall. It is marked by the usual abdominal distention, and by pain, tenderness, a doughy feeling, and ascites. When the abdomen is opened extensive adhesions are found and the omentum is usually discovered to be retracted into the upper abdomen. In many cases exposure of the abdominal cavity to the air or washing it with saline solution,

weak hydrogen peroxide, or weak bichloride of mercury solution effects a cure.

3. Enteric tuberculosis. This condition is almost always an acute process associated with progressive pulmonary tuberculosis and general miliary tuberculosis of the peritoneum. It is not suitable for surgery.

4. Appendiceal tuberculosis. Appendiceal tuberculosis is not an infrequent affection. If neglected, it may result in the ileocecal type. Surgery has given excellent results.

5. Ileocecal tuberculosis. Ileocecal tuberculosis is a subacute, slowly progressing disease marked by a mass in the lower right quadrant and usually associated with advanced pulmonary tuberculosis. Excision is indicated if the general condition is favorable. Otherwise palliative measures with short-circuiting of the bowel are all that is feasible.

6. Rectal tuberculosis. Rectal tuberculosis is typically hypertrophic in character and is caused by attenuated human or bovine tubercle bacilli. Increasing stricture of the bowel is the chief complication and usually involves the rectal ampulla and the entire circumference of the bowel for a distance from 2 to 5 in. In many cases excision with the formation of an artificial anus results in a complete cure.

7. Anal tuberculosis. This condition occurs in three forms: (1) tuberculous fistula, (2) tuberculous skin involvement, and (3) secondary tuberculous involvement of the deeper anal structures. It is an uncommon condition which runs a more acute course than the rectal and cecal types. The pain is more severe and usually is associated with tuberculosis elsewhere. The treatment is operation combined with treatment of the rectal involvement or of tuberculosis in other parts of the body.

Taken as a whole, the prognosis of gastro-intestinal tuberculosis complicating pulmonary tuberculosis is not favorable.

LOUIS HANDELMAN

Carman, R. D.: *The Roentgenology of Tuberculous Enterocolitis. J. Am. M. Ass.*, 1920, LXIV, 1371.

The roentgen ray furnishes the most certain means yet available for the early recognition of tuberculous colitis. A lesion in the ileocecal coil, especially if it is associated with pulmonary tuberculosis, is probably tuberculous. The distal segment of the colon is seldom invaded.

The nodular form of tuberculosis of the intestine can scarcely be recognized roentgenologically unless it encroaches on the lumen of the bowel. In the

usually associated to a greater or less extent, dependent upon the extent of the disease.

medullar, there was paresis due to destruction of cord tissue. In all three cases objective sensory changes were noted.

Tract symptoms are of no value in the level diagnosis. When spinal disease can be excluded

an increased paralysis and the Brown-Séquard syndrome following the removal of spinal fluid may be considered pathognomonic of cord tumor. In one of the author's cases syphilis was co-existent with the cord tumor. I. E. BISKOW

SURGERY OF THE NERVOUS SYSTEM

Frazier, C. H.: The Present Status of Neurological Surgery. *J. Lancet*, 1920 n s vl, 237

In this article the author reviews briefly the various procedures in the field of neurosurgery with comments based on his own experience.

The major operation for the treatment of trigeminal neuralgia, section of the sensory root of the Gasserian ganglion, may be characterized as the radical operation for the relief of major or epileptiform neuralgia. The routine performance of cerebral decompression in cases of cerebral contusion with or without basal fracture is unjustified. This operation should be reserved for cases which, during the first forty-eight hours, develop signs of increasing intracranial pressure of such degree as to threaten the function of the medullary centers. As far as the surgery of craniospinal injuries is concerned,

a bone-filling graft of a thin shell of the outer table of the skull.

In his discussion of brain tumors the author states that a uniform classification should be adopted. Operation in these cases is too often delayed in the vain hope that the localization symptoms will enable the physician to confirm the diagnosis.

Frazier has been very much impressed with the possibilities of the X-ray and radium as supplements to surgical therapy. As regards nerve suture, he believes that in the final analysis only one method of restoring function remains—simple end-to-end suture of healthy nerve segments. The surgery of the spinal canal offers the chance for a higher percentage of permanent results than surgery of the brain. Section of the posterior roots as a means of relieving spasticity has not fulfilled the promise of its sponsors. E. C. ROBITSEK

Forrester-Brown, M.: Difficulties in the Diagnosis of Nerve Function. *Brit. J. Surg.*, 1920, vii, 495.

The difficulties in the diagnosis of peripheral nerve lesions are discussed under the following heads: mentality, sensory difficulties, motor difficulties, abnormal nerve distribution, and the interpretation of electrical tests.

The examination is rendered more difficult in patients with mental inertia. Alertness and interest in the progress of the condition on the part of the patient hasten recovery.

Errors are less apt to occur in tests for sensory loss than in tests for motor loss. The limb should be warm and the patient's eyes closed during the examination. In testing for Tinel's sign the examiner should be sure that the tingling is not due to pressure on adjacent nerves.

The difficulties in diagnosing motor function are the greatest. Limitation of action by adjacent muscles, tension on fascia due to contraction of other muscle groups, and simultaneous contraction of all neighboring muscles make it difficult to determine whether or not the muscle tested is functioning. The author enumerates in detail conditions in the upper and lower extremities in which simulated muscle action is apt to occur.

In cases of abnormal nerve distribution a correct diagnosis before operation is impossible. The author cites three cases in which the median nerve supplied the ulnar muscles and one case in which the ulnar nerve supplied the median muscles.

Electrical examinations are important and must be done carefully. Since electrical reactions are difficult to obtain when the limb is cold it should be warmed before it is tested. The author has found that voluntary contraction in a paralyzed muscle returns before a faradic response can be obtained. W. O. ORR.

Pollock, L. J.: The Clinical Signs of Nerve Injury and Regeneration. *Surg., Gynec. & Obst.*, 1920, xxx, 472.

To the author's knowledge there is no way in which the complete loss of function due to anatomical interruption of a nerve can be differentiated from that due to physiological interruption produced by compression, etc. In this article he defines the extent to which he believes the loss of function is of value in determining the severity of a peripheral nerve lesion. He believes the signs of regeneration of a nerve are the manifestations of the recovery of function. Among the latter are the return of sensation, both subjective and objective, the disappearance of the reaction of degeneration, an increase of tone, the disappearance of atrophy, and the return of motion.

The order in which the signs of regeneration appear has been given by Benisty as follows: (1) sensory regeneration consisting of pain when the skin is pinched, pain when the nerve is pressed below the lesion, formation on pressure of the nerve, and spontaneous aching in certain muscles; (2) the arrest of atrophy and the return of tonicity;

suddenly developed a large duodenal fistula. Water and nourishment taken by mouth escaped through the incision as rapidly as it was swallowed. The patient's condition was so desperate that a prolonged operation could not be considered. Hence a simple jejunostomy was done under gas oxygen anesthesia according to the technique described by C. H. Mayo. Water and nourishment were given exclusively through the tube. The improvement was marked and immediate. With the exception of bile from the drain in the common duct, all discharge through the abdominal incision ceased at once and in three weeks the wound closed spontaneously. Feeding by mouth was begun cautiously and as there was no untoward symptom the duodenal tube was removed. There was no leakage and the patient made a complete recovery.

Gibson, C. L.: The Results of Operations for Chronic Appendicitis; A Study of 555 Cases. *Am J M. Sc.*, 1920, cliv, 654

Two hundred and fifty-nine of the patients traced had no complaint; 65, a minor complaint; 102 were unimproved; and 3 had died. One hundred and twenty-six were lost track of.

Of the 102 whose condition was unimproved 65 had had an obviously pathologic appendix and of this number 66 per cent had had further exploration at the time of the operation. Of the remaining 37 patients 87 per cent had had further exploration. In the author's opinion the lack of improvement in the 65 cases may be due to the fact that in the presence of a pathologic appendix the abdomen was not sufficiently explored for further conditions. In such cases exploration of the upper abdomen particularly is important, especially in the cases of women and those past the second decade of life.

To avoid disappointing results the author recommends:

1. A comprehensive and detailed history
2. A complete and thorough physical examination.
3. Particular caution in operating on women
4. Particular caution in operating on the more mature patients, especially women. In this class other lesions may co exist with the appendicitis or be mistaken for it.
5. The avoidance of operation if there is no clear history of well-defined attacks, especially localized pain with nausea, or vomiting
6. A good-sized incision and a search for other lesions even if a pathologic appendix is found.
7. A thorough search for other lesions if the appendix is not pathologic, even if a supplementary incision is necessary.

P. M. CHASE

Whitelocke, R. H. A.: Appendectomy, by a New Route and a Simplified Procedure. *Proc. Roy. Soc. Med., Lond.*, 1920, xiii, Sect. Surg., 129.

The operation described was designed by the author for the removal of the appendix vermiformis

through the right iliac fossa when general exploration of the abdominal cavity is not necessary, i.e., in acute rather than in chronic cases. The method is a simple muscle splitting procedure and so successful that Whitelocke employs it in preference to all others.

In 894 operations performed at all stages of the disease and on patients of both sexes varying in age from 3 to 79 there were 19 deaths. The immediate mortality would therefore appear to be no higher than that of any of the other procedures. As regards remote sequelæ, Whitelocke states that there was not a single case of hernia or abnormally weak scar.

E. C. RODITSHEK.

Bland-Sutton and others: Discussion of Diverticulitis. *Proc. Roy. Soc. Med., Lond.*, 1920, xiii, Sect. Proct., 79

Diverticulitis is a very important clinical condition and is not so rare as was previously supposed. In a series of 24 cases it appeared between the ages of 46 and 68 years. The region most frequently involved was the lower sigmoid. The period of complaint varied from two months to twenty years. The condition has been ascribed to numerous factors such as increased intracolonic pressure due to intra- or extra-abdominal causes, colitis, constipation, and malignancy.

Colitis seems to play an important part in the etiology as it has been noted before as well as after the formation of the diverticula. At first there is a slight catarrhal inflammation of the bowel, the infection passing along the blood vessels and inducing a tight constriction of the bowel wall. This may persist for years. The iliac colon becomes tighter and contracted, and small-cell infiltration results in the formation of a tumor. The sacculi lose their muscular coat as the bowel wall is fatty and sodden, and the circular muscle becomes retracted down to the base of the sacculi. The diverticula do not present the "tied string" appearance observed in malignancy. A local peritonitis with dense adhesions may develop in the region of the diverticula with perforation of the bladder.

The most frequent symptoms are chronic obstruction, pain in the abdomen, tumor, diarrhoea, fever, acute obstruction, perforation into the bladder, and bleeding. The latter becomes less frequent. The most valuable aid in arriving at a diagnosis is the X-ray. Clinical points of importance are constipation, acute inflammatory attacks with high fever and rigor, the absence of blood, the presence of a large tumor for a long period of time, and perforation into the bladder.

In the treatment colostomy is the most satisfactory procedure. Resection with short circuiting of the bowel is less often possible because of the location of the diverticula. It is not advisable to break up the adhesions as usually such adhesions are very dense and are intersected with septic foci which, if disturbed, may set up an acute peritonitis.

R. R. MUSTELL.

Burke, N. H. M.: The Electrical Stimulation of Nerves at Operation. *Lancet*, 1920, cxcviii, 761.

The author's observations are based on a study of 80 cases of peripheral nerve injuries. A Lewis sledge coil attached to a bipolar electrode with pin-point terminals placed close together meets all requirements. The nerve, which was freed below and above the site of injury, was stimulated before and after it was freed from the scar tissue. Stimulation was applied to different aspects of the nerve in an attempt to pick out the fibers supplying the various muscles.

In 25 of the cases studied the nerve was completely divided, in 13 almost completely divided, in 2 slightly divided, and in 42 cases involved with scar tissue. The author concludes that: (1) conductivity is conclusive evidence of the physiological continuity of nerve fibers, as is also excitability below the lesion, (2) improvement in conductivity or peripheral excitability following neurolysis suggests chemical ductivity and not conclusive indication of fairly severe nerve disturbance. W. O. Orr

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Piersol, G. M.: Acidosis. Its Mechanism, Recognition, and Clinical Manifestations. *N. York M. J.*, 1920, cxi, 793.

The author reviews the present state of our knowledge in regard to acidosis. Van Slyke's and Henderson's definitions of acidosis are quoted. The mechanism by which the normal equilibrium between acids and alkalis in the body is maintained is discussed.

Acidosis may be both true and compensated. In true acidosis, which is rare and incompatible with life, there is a definite increase of the hydrogen-ion concentration of the blood due to the failure of the defensive mechanism to restore the reaction of the blood to normal. In compensated acidosis the hydrogen-ion concentration of the blood is maintained at its normal level despite a decrease in the alkaline reserve.

The methods of estimating the failure of alkali reserve may be classified into three groups, those applicable (1) to the urine, (2) to the respiratory apparatus, and (3) to the blood. Those applicable to the blood are the most direct and accurate. Van Slyke's method of determining the alkali re-

several different mechanisms. It is always secondary, it may later become the cause of serious difficulties. Hyperpnea without cyanosis or respiratory difficulty is the most striking if not the only gross clinical manifestation.

The acid intoxications of diabetes, starvation, and improperly balanced diets are described. Acidosis observed late in nephritis is a secondary phenomenon. A slight compensated acidosis has been

alter various operations and in such cases is apparently due chiefly to the anesthetic, especially chloroform. True acidosis has been observed also in physiological shock but is considered a secondary manifestation and not a cause. The author discusses also acidosis in children. W. H. Nixler.

Goetsch E.: The Epinephrin Hypersensitiveness Test in the Diagnosis of Hyperthyroidism. *Pennsylvania M. J.*, 1920, xciii, 431.

In hyperthyroidism there is hypersensitiveness to epinephrin proportional to the degree of the hyperthyroidism. In hypothyroidism there is an increased tolerance for epinephrin administered hypodermically. In other words, hyperthyroidism produces hypersensitiveness of the sympathetic nerve terminations upon which epinephrin has a specific stimulating action.

The technique of the epinephrin hypersensitiveness test is as follows:

The patient, particularly if a nervous individual, is put to bed at least a day previously. In other

stant. A record having been made also of the patient's subjective and objective condition, nervous manifestations, throbbing of the heart and arteries, beat and cold sensations, asthenia, pallor or flushing of the hands and face, tremor, perspiration, etc., 0.5 ccm (7.5 minims) of a commercial 1:1,000 solution of adrenalin chloride is injected into the deltoid region. The pulse, blood pressure, and respiration, and any changes in the subjective and objective manifestations are then noted every two and a half minutes for ten minutes, then every five minutes up to one hour, and then every ten minutes for half an hour.

In a positive reaction there is an early rise in the systolic pressure, a fall in the diastolic pressure, and a rise in the pulse rate of at least 10 and sometimes as many as 30 pulsations per minute. With these changes many of the signs and symptoms of the

The disease may occur at any age. Several cases have been reported in which it was present at birth. It is more common in men. It may remain latent for several years, but as a rule runs a rapid course and soon causes death.

The earliest symptoms are usually vague gastrointestinal disturbances. After the tumor develops the patient suffers a loss of flesh, cachexia, and digestive trouble. Icterus is present in 63 per cent of the cases, ascites in 58.5 per cent; edema in 41 per cent, splenic tumors in 32 per cent, and fever in 14 per cent. In 86 per cent of the cases the condition is associated with cirrhosis.

Although primary cancer of the liver is very malignant, operations have given successful results in some cases. The surgical treatment consists usually of excision of the tumor and scraping of the cavity. In more radical operations the entire affected lobe has been removed successfully. In cases in which a recurrence has developed a second operation has been more successful. I W. BACH

McConnell, A. A.: Cyst of the Common Bile-Duct. *Brit J Surg*, 1920, vii, 520

The author reviews 36 collected cases of cyst of the common bile-duct, 35 of which had been reported in the literature. The case reported in this article is that of a girl, 11 years of age, who had had severe attacks of pain for more than a year before her admission to the hospital. The abdomen increased in size and was distended especially in the epigastric and right hypochondriac regions. The appetite became poor, and on one occasion slight jaundice was noticed. On palpation a hard irregular

right anterior superior iliac spine. Blood and stool but during icteric

hepatic flexures were found pushed forward by a large tense cyst. The gall-bladder was independent of the cyst and the liver was cirrhotic. The cyst was found to extend from the extreme right of the abdomen to a point to the left of the midline and to lie between the aorta, vena cava, and right kidney behind, and between the pancreas and duodenum in front.

large quantity of pus mixed with bile was evacuated. About two years later the patient again returned to the hospital complaining of pain and loss of appetite. When the abdomen was opened the cyst was found to have shrunk to the size of a walnut. The patient's general appearance suggested thyroid insufficiency and on the administration of thyroid extract remarkable improvement was noted.

The salient features of the 36 collected cases are summarized. The average age was 13 years. Five patients were males and the others females.

The growth, which may reach a capacity of 4 to 5 liters, is generally located in the upper and middle portions of the common bile-duct.

mality or is dependent on some exciting cause.

The combination of jaundice, pain, and a large tumor in a young person should suggest the diagnosis. In only one case was jaundice absent. When pain or tumor are present alone, or when pain and tumor are associated, Ehrlich's test for urobilinogen is of value. A positive reaction definitely indicates organic disease.

Of the 36 patients, 25 died, of 10 patients treated by drainage alone, 18 died. The main reason for this high mortality was the neglect of the surgical principle that a sterile cavity should not be drained. An anastomosis was performed between the cyst and the intestine in the cases of 5 of the 6 patients who recovered. The diagnosis should be confirmed by aspirating the cyst retroperitoneally. When the cyst wall has collapsed an anastomosis should be made between it and the duodenum as in a cholecyst-enterostomy. M. B. KELLOGG

Bassler, A.: The Diagnosis of Chronic Gall-Bladder Pathologies. *Med Rec*, 1920, xcvi, 890

The diagnosis of a chronic gall-bladder condition is made most easily by grouping the symptoms which represent the characteristic entities.

ing after and between meals and an uncomfortable feeling in the epigastrium. The test meal shows a moderate increase in acidity. The patient is usually a female who has borne children but there was no close association between a child-birth and the symptoms. The bowel examination reveals a saccharobutyric toxemia. There is some tenderness over the gall-bladder. The X-ray examination is negative. In a case of this kind the condition is probably what is known as a "strawberry" gall-bladder.

Another type of case is that of stout women, frequently of the Semetic or the Teutonic races, whose most distressing symptom is belching. Acidity is above normal. The symptoms began after child-birth. There are slight chills and hyperesthesia. Distress is felt in the gall-bladder region. Such patients have chronic cholecystitis with inspissated bile.

The third type of case resembles the first two except that in about one-third of the cases there are attacks of colic and jaundice. The acidity is normal or below normal and there is marked gall-bladder tenderness. The condition is probably cholelithiasis and cholecystitis.

The fourth type of case is that in which, with gall-bladder symptoms, there are symptoms of pyloric obstruction due to band formation or

ever, the ultimate highest development of the cells depends upon the structures among which they are situated and upon their location in relation to the entire body. In this connection the authors suggest that transplantation of the epiblastic covering of chorionic villi to a denuded skin surface might lead to a successful take with the formation of squamous epithelial surface.

The authors divide these new growths into two main types which grade into each other (1) those resembling the surface epithelium, and (2) those more or less imperfectly resembling glandular adnexa. At one end of this scale the typical rodent ulcer derived usually from the pilo-sebaceous structures is found and at the other end the typical squamous epithelioma with its well-marked cell nests.

Four case histories typifying various gradations in the scale of the classification are presented with detailed descriptions of the microscopic findings.

R. B. BERTMAN

Landau, H.: Partial Antigen Therapy According

Zeitschr. f. Klin. Med., 1920, CXXI, 397

In the theoretical part of his article the author points out that the partial antigen therapy does not differ essentially from the tuberculin treatment as the antigenic quality of the tubercle fats has not been proven. In 12 cases of surgical tuberculosis treated with partial antigens no demonstrable result could be attributed to the treatment, although it may have been responsible for transient improvement noted. The intracutaneous reaction is not sufficiently definite to be of value in the diagnosis. Partial antigen therapy therefore can be considered only an adjunct to the ordinary treatment.

FLEISCH-THIESBUS (Z)

Rapp, H.: The X-Ray Treatment of Surgical Tuberculosis in the Reserve Hospital Bad Rappenau, 1914-1918 (Über die Röntgenbehandlung der chirurgischen Tuberkulose im Reservelazarett Bad Rappenau 1914-1918) *Strahlentherapie*, 1920, V, 290

In the X-ray treatment of surgical tuberculosis greatly aid the X-ray treatment.

The author reports the results obtained by months of treatment in 300 cases of tuberculosis of various forms and stages. The patients were soldiers whose general condition was good, most of them had no pulmonary involvement. In many cases healing was obtained without any surgical treatment when X-ray treatment was given immediately after an early diagnosis and continued for some time.

Especially good results were obtained (100 per cent) in cases of simple, closed, and cascated lymph-gland involvement. Occasionally a minor procedure such as aspiration or excocleation was necessary. Injections of iodoform-glycerin proved unsatisfactory, hastening the caseation. Frequently for a few days after the X-ray treatment a reaction was noted such as swelling, pain in the gland, local hyperaemia, and fever. The results were not as good in cases of suppurating lymphomata with fistula formation. In addition to local improvement and often preceded by it the general condition improved. It was found important to obtain free drainage by means of tube drains rather than by gauze strips. The duration of treatment averaged fourteen months. Peritonitis was cured in from four to six months in 90 per cent of the cases but only cases of dry peritonitis were treated. The patient's general condition improved first and the local condition later. In raying the abdomen unpleasant effects were avoided by exposing only 6 fields at one session.

Tuberculosis of the joints responded much more slowly and frequently the result was only partial. The effect of the raying was variable. The synovial form reacted more favorably than the bony form. No surgical intervention was necessary in the former except perhaps puncture of the focus and withdrawal of the pus. In the bony form, in spite of the surgical removal of sequestra, free exposure of the joint, etc., only a small number of cases were ultimately cured. Some of them showed temporary improvement but in others resection or amputation was necessary. One cause of the poorer results was the presence of pulmonary lesions. The results were particularly poor in the bone cases if surgical intervention had preceded the treatment or a fistula had developed. A cure was obtained occasionally, however, when the entire tuberculous bone was removed and the treatment was given energetically.

Tuberculosis of the spine is especially resistant. In a case of bladder involvement definite improvement followed the removal of a tuberculous kidney; three fistulae closed up. Involvement of the testicle and epididymis without caseation was completely cured; suppurating or caseating organs were resistant even after excocleation. Tuberculous anal fistulae did not react at all; two cases of tendon-sheath involvement one reacted favorably. The technique used for the different forms is given in detail.

SIEMON (Z).

Scholl, A. J., Jr.: Anthrax: A Comparison of the Surgical and Non-Surgical Methods of Treatment. *J. Am. Med. Ass.*, 1920, LXXIV, 1441

The author reviews the literature on anthrax and reports 51 cases treated in the Massachusetts General Hospital between 1888 and 1918.

vals, and the ingestion of vichy or Carlsbad water or hot water containing sulphate or phosphate of soda.

Exercise causes increased movement of the diaphragm and liver and therefore an increased flow of bile into the duodenum. Horseback riding is best, but bicycling, climbing, rowing, and tennis are also excellent. After pregnancy, massage should be used.

In the dress, corsets, tight waist bands, and heavy skirts should be avoided.

Meals at short intervals are better than large meals at long intervals and the patient should have something to eat before going to bed as when food enters the duodenum bile is driven out by the gall-bladder.

Vichy, Carlsbad, or hot water containing sulphate or and shou
The only
salicylate of soda.

2 The prevention of catarrhal inflammation due to gastritis and indigestion by careful dieting, drugs, and the prevention of constipation. For this purpose the administration of phosphates, soda, and mineral waters, exercise, and the elimination of focal infections are of value.

3. The removal of catarrhal inflammation of the biliary and intestinal tracts. In addition to the measures mentioned the abdomen should be kept warm to prevent chilling and if there is tenderness heat should be applied over the gall-bladder.

4 The treatment of gall-stones during and between attacks. If the attacks are severe, morphine or chloroform may be necessary but the author has discarded the former because of its habit-forming tendency. Atropine, belladonna, amyl valerate, and antipyrin are useful drugs. Benzyl benzoate is also to be recommended. At times hot baths or dry heat are of value.

Between the attacks the surgeon may advise the removal of the stones or the gall-bladder, but the stones may form again even in the ducts. A change of occupation may be beneficial. Gentle exercise in the fresh air, deep breathing, and the wearing of warm clothes to prevent chilling are indicated.

Bile acids and salts and salicylic acid may be given by mouth. Other drugs which have proved satisfactory in the elimination of gall-stones are acid sodium oleate, phenolphthalein, and menthol in capsule combination; sodium phosphate, bicarbonate, and sulphate in hot water; eunatrol and oleic acid and turpentine given by enema.

The diet should include a variety of fleshy foods, but the yolks of eggs, peas, fatty meats, all fried foods, and sugar in large quantities are contra-indicated.

The treatment at health resorts is of benefit as it

Vaccines made from the organisms recovered from the bile with a duodenal tube and combined with organisms from other foci of infection are of value. Autogenous vaccines are best. Small doses should be given frequently and increased until a definite reaction is obtained.

Local treatment through the duodenal tube connected with a Murphy drip is also beneficial. Direct medication with magnesium sulphate or some other purgative and with antiseptics may be employed.

Any form of heat applied externally to the hypochondrium is of value. M. H. HOBART.

Benedetti, U.: *Annular Pancreas* (Contributo allo studio del pancreas anulare) *Polisclin*, Roma, 1920, xxvii, sez. prat., 81.

The annular form of pancreas is a very rare anomaly. Benedetti has been able to find only 6 cases recorded in medical literature.

In this article the author reports the case of a soldier who died from the effects of wounds of the limbs. The patient had had intestinal and gastric symptoms but the examination of the faces and urine did not suggest the presence of a pancreatic lesion. Autopsy showed that the descending portion of the duodenum was constricted in a stout ring formed by the head of the pancreas. In order to bring the second portion of the duodenum into view it was necessary to cut the ring. The stomach was markedly dilated, the greater curvature being about three finger-breadths below the umbilicus.

Annular pancreas has been ascribed to inflammation but Benedetti inclines to the view of Giannelli who pointed out that the pancreatic islets reach their maximum development in the lower vertebrates and are least developed in the higher vertebrates. He therefore concluded that the annular pancreas in man is the anomalous occurrence of a morphologic condition which in the lower vertebrates is normal. W. A. BRENNAN.

Charlton, W.: *The Results of Splenectomy in Pernicious Anæmia, with Special Reference to a Case of Pulmonary Tuberculosis* (Bemerkungen ueber die Erfolge der Milzextirpation bei perniziöser Anæmie mit besonderer Berücksichtigung eines Falles von Lungentuberkulose) *Therap. Halbmonatsschr.*, 1920, xxvii, 111.

Encouraged by the results obtained by splenectomy in Banti's disease, the author treated a case of pernicious anemia similarly. The case was complicated by pulmonary tuberculosis and a previous blood transfusion had been given without benefit. As the result of his observation of the effect of splenectomy upon both pernicious anemia and pulmonary tuberculosis, Charlton has come to the conclusion that there is no relation between the two conditions and the presence of pulmonary tuberculosis is not a contra-indication to splenectomy in such cases. The patient's general condition as well as the blood picture showed a decided improvement following the operation whereas the lung condition remained uninfluenced and gradually became worse. ROPE (Z)

Especially good results were obtained (100 per

more or less imperfectly resembling granular

nests

Four case histories typifying various gradations in the scale of the classification are presented with detailed descriptions of the microscopic findings.

R. B. BERTMAN.

Landau, H.: Partial Antigen Therapy According

397

In the theoretical part of his article the author points out that the partial antigen therapy does not differ essentially from the tuberculin treatment as the antigenic quality of the tubercle fats has not been proven. In 12 cases of surgical tuberculosis treated with partial antigens no demonstrable result could be attributed to the treatment, although it may have been responsible for transient improvement noted. The intracutaneous reaction is not sufficiently definite to be of value in the diagnosis. Partial antigen therapy therefore can be considered only an adjunct to the ordinary treatment.

FLESCH-TIEBESBUS (Z).

Rapp, H.: The X-Ray Treatment of Surgical Tuberculosis in the Reserve Hospital Bad Rappennau, 1914-1918 (Ueber die Röntgenbehandlung der chirurgischen Tuberkulose im Reservelazarett Bad Rappennau, 1914-1918) *Strahlentherapie*, 1920, 3, 290

In the X-ray treatment of surgical tuberculosis advantage should be taken also of climatic and balneologic factors. General treatment, sun baths, artificial heliotherapy, rest, and a favorable diet all greatly aid the X-ray treatment.

The author reports the results obtained by months of treatment in 300 cases of tuberculosis of various forms and stages. The patients were soldiers whose general condition was good; most of them had no pulmonary involvement. In many cases healing was obtained without any surgical treatment when X-ray treatment was given immediately after an early diagnosis and continued for some time.

preceded by it the general condition improved. It was found important to obtain free drainage by means of tube drains rather than by gauze strips. The duration of treatment averaged fourteen months. Peritonitis was cured in from four to six months in 90 per cent of the cases but only cases of dry per-

slowly and frequently the result was only partial. The effect of the raying was variable. The synovial form reacted more favorably than the bony form. No surgical intervention was necessary in the former except perhaps puncture of the locus and withdrawal of the pus. In the bony form, in spite of the surgical removal of sequestra, free exposure of the joint, etc., only a small number of cases were ultimately cured. Some of them showed temporary improvement but in others resection or amputation was necessary. One cause of the poorer results was the presence of pulmonary lesions. The results were particularly poor in the bone cases if surgical intervention had preceded the treatment or a fistula had developed. A cure was obtained occasionally, however, when the entire tuberculous bone was removed and the treatment was given energetically.

Three cases of caries of the rib were cured. Undermining of tissue in wounds should be avoided, free drainage should be established, and every secondary infection should be avoided.

Tuberculosis of the spine is especially resistant. In a case of bladder involvement definite improvement followed the removal of a tuberculous kidney; three fistulae closed up. Involvement of the testicle and epididymis without castration was completely cured; suppurating or caseating organs were resistant even after excision. Tuberculous anal fistulae did not react at all; of two cases of tendon-sheath involvement one reacted favorably. The technique used for the different forms is given in detail.

SMITH (Z).

Scholl, A. J., Jr.: Anthrax: A Comparison of the Surgical and Non-Surgical Methods of Treatment. *J Am M Ass*, 1920, LXIV, 1441

The author reviews the literature on anthrax and reports 51 cases treated in the Massachusetts General Hospital between 1888 and 1918.

Chapman, H. S.: The Results Obtained in the Treatment of Chronic Arthritis by the Removal of a Distant Focus of Infection. *Ann. Surg.*, 1920, LXXI, 648.

The most common foci of infection are the teeth, the tonsils, the genito-urinary tract, the sinuses, the bronchi, the gall-bladder, the gastro-intestinal tract, the pancreas, and the appendix. Streptococci, gonococci, staphylococci, and pneumococci are the organisms most frequently found and arthritis, nephritis, gastric ulcer, endocarditis, myocarditis, intis, and hyperthyroidism are the most common conditions due to distant foci of infection.

Bradford in 1883 reported two cases of so-called rheumatic arthritis of the spine in which there was a history of gonorrhœa. Billings reported eight cases of chronic arthritis which were cured by the removal of the focus of infection. In two cases injections into rabbits of streptococci obtained from the foci caused a simple or multiple arthritis. In most of the cases reported in which marked improvement followed the removal of the focus of infection the focus was in the teeth or tonsils. In some cases improvement was noted in two or three weeks, but as a rule the joint symptoms did not disappear entirely before six or eight months.

Every case of chronic arthritis and acute arthritis should be treated on the presumption that it is due to an infection or to trauma. The history should be taken carefully and the patient subjected to a detailed physical examination. Usually routine blood

examination particular attention should be paid to the teeth, nasal sinuses, tonsils, and genito-urinary tract.

In many cases a number of foci have been found, such as a chronic prostatitis and chronic tonsillitis, or a chronic prostatitis and a chronic root abscess or pyorrhœa.

After proper treatment 42.3 per cent of the cases in which the genito-urinary tract was the source of infection have shown definite improvement.

It is of interest to note that in over 54 per cent of the cases in which the teeth were the foci, the condition developed between the ages of 40 and 60 years. Of these, 61.5 per cent showed definite improvement. In 15.3 per cent there was no improvement.

Of seven cases in which tonsillectomy was performed, there was marked improvement in four.

The article is summarized as follows:

1. Fifty per cent of cases of chronic arthritis treated by the removal of foci of infection showed definite improvement.

2. The most striking results were obtained when the focus was in the genito-urinary tract. Very

rapid recovery occurred in cases in which the teeth were the focus of infection.

3. Removal of the tonsils in a few cases was followed shortly by the disappearance of pain and later by the return of function to the injured joint.

J J KURLANDER.

Molesworth, H. W. L.: A Clinical Study of Infections of the Hand. *Lancet*, 1920, cxcviii, 1035

The author reviews 168 cases of infections of the hand in working people and shows the uniformly satisfactory results which are obtainable by early and judicious surgical intervention.

Fluctuation as an indication of the presence of pus should not be awaited. The point of maximum tenderness is most valuable in the determination of the site of suppuration. Wide and ample incision for free drainage reduces to a minimum the time of disability and the danger of serious complications.

Gas anesthesia is necessary for efficient treatment and a tourniquet is an additional convenience as it allows careful exploration in a bloodless field.

Abscess on the palmar aspect of the hands and fingers was responsible for 50 per cent of the cases of suppurative tenosynovitis in the series reviewed. In such cases the sheath should be opened to its full length, the portion over the joint being left intact. If the tendon is a dull yellow, excision is indicated. The proximal end of the tendon should first be stitched to the periosteum of the proximal phalanx to prevent retraction upward and the formation of a secondary abscess. In the after-care it is important to move the fingers daily.

The treatment of bone and joint infections is unsatisfactory as 5 of every 17 cases eventually require amputation. These infections are always secondary and the result of spreading suppuration which at first may be treated very easily and satisfactorily.

The author rightly lays claim to originality in the view that palmar abscess is the most common cause of tenosynovitis and that the method of securing the proximal end of the tendon to the proximal phalanx before excising it is an additional and useful surgical procedure.

A C. JOHNSON

Bier, A.: Nearthroses, Especially Those of the Knee Joint (Ueber Nearthrosen, besonders ueber solche des Kniegelenks) *Zentralbl. f. Chir.*, 1920, xlvii, 2

The feasibility of any operative method for the formation of a nearthrosis is best tested in the knee joint. Even after Helferich's method—the interposition of a soft tissue flap between the ends of the bone—a mucous membrane sac is formed by liquefaction of the transplant. Helferich's method is very complicated in the foot and knee joint. The operative field must remain sterile, and careful attention is necessary in the after-treatment.

Other more simple methods are those in which the cavity is filled with blood, serum, normal salt

as in such cases there is always grave danger of

brachial artery is sectioned below the origin either of the superior internal collateral artery or of the lower collateral artery ligation of the two arterial ends will suffice if the collateral circulation is assured by anastomoses of the deep brachial artery with the recurrent radial arteries or anastomoses of the internal collaterals with the anterior and posterior recurrent ulnar

Circular suture of the brachial artery is contraindicated in infections of the arm and extended contusions complicated by septic necrosis of the muscles. With these exceptions, however, it is the treatment of choice in complete traumatic section.

veins is very serious, the incidence of gangrene following simultaneous ligation of the artery and veins is, according to Makins, 24.5 per cent.

In 2 of the 3 cases operated on by the author the results were successful. In 1 of these 2 successfully treated cases the artery had been almost completely sectioned and in the other a vast thrombosis had formed and there was gangrene of the hand and forearm. In the third case the operation failed because of the great extent of the traumatism and amputation of the limb became necessary. The Carrel technique was employed. W. A. BRENNAN

GENERAL BACTERIAL INFECTIONS

Eberle, D.: The Treatment of Tetanus by the Com-

spinale Antitoxininjectionen nach Betz und Duhamel. *Deutsche med. Wochenschr.*, 1920, xli, 94

In 1916 Fraenkel recommended the intracranial subdural injection of tetanus antitoxin in the treatment of tetanus. Betz and Duhamel were able by this method to cure 3 out of 4 severe cases. In 10 cases reported by other men the value of the pro-

cedure was demonstrated. In 8 cases the procedure increased the intracranial pressure and aggravated the symptoms, did not have any influence upon the convulsions. Schmidt also was unsuccessful with the method in 8 cases. All of these were treated on the first day of the disease after an incubation period which in some cases was eight days in length.

KREUTER (Z)

SURGICAL DIAGNOSIS, PATHOLOGY, AND THERAPEUTICS

Strangeways, T. S. P.: Observations on the Nutrition of Articular Cartilage. *Brit. M. J.*, 1920, 1, 661

The author does not believe that the nutrition of the cartilages of joints is derived from the vessels of the adjoining structures, the marrow and bone and the circulus articulari vasculosus, as is now the accepted view. In his opinion its source is the synovial fluid of the joint.

Four instances of loose bodies in joints are discussed, the attempt being made to prove that the bodies were fragments of cartilage broken off by trauma and received their nutrition from the synovial fluid.

The author holds that if his hypothesis is true the cause of degenerative processes in arthritis is due to a decrease in the nutritive value of the synovial fluid. B. R. PARKER

EXPERIMENTAL SURGERY AND SURGICAL ANATOMY

Stewart, M. J.: On the Use of Polarized Light in the Detection and Investigation of Suture Materials Embedded in the Tissues. *Brit. M. J.*, 1920, 1, 663.

This article presents a study of the optical activity of certain suture materials and the detection of their presence in sections of tissues by means of the polarizing microscope.

Silk, worm gut, silk, and linen are very active optically and retain this activity for years, even

time.

A source of grave error in the procedure is the presence on the surface of the sections of small air-born particles of cotton wool which have also a high optical activity. B. R. PARKER

ROENTGENOLOGY AND RADIUM THERAPY

Watkins, W. W.: The Pathologic Findings in 600 Roentgen-Ray Examinations of the Digestive Tract. *Am. J. Roentgenol.*, 1920, n. s. vii, 234

This report has a threefold object: to tabulate the findings in the cases of patients coming to the general practitioner with chronic symptoms referred to the digestive tract; to illustrate the importance of thorough gastro-intestinal X-ray examinations, however definite the symptoms, and to demonstrate the frequency of certain lesions and combined lesions of the digestive tract.

Conservative treatment then consisted of free drainage and immobilization by means of plaster casts. Double fenestrated and bracket casts were both employed routinely in large field hospitals in which soldiers arrived from twenty-four to forty-eight hours after the injury. Aluminum brackets were especially favored because it was possible to bend them easily into the required form.

With open treatment installed, wounds were cleansed two or three times daily with hydrogen peroxide. Cases in which joints also were involved and which reached the hospital within twenty-four hours after injury were treated by arthrotomy and the removal of foreign bodies from the articular cavities. This was followed by the injection of a mixture of phenol, camphor, and alcohol into the joint cavity, closure of the joint, and the application of a cast.

Close watch of the patient's progress is necessary in order that amputation may be performed quickly for such indications as gangrene, secondary hemorrhage, extensive cellulitis, and profuse and prolonged suppuration.

The greater portion of the article is made up of case histories which are illustrated with photographs, radiographs, and diagrams of the lesions discussed.

W. R. MEERK.

Fleuster: The Treatment of Fractures with the Schoenmann Clamp; Double Clamp Extension (Frakturenbehandlung mit der Schoenmannschen Zange; Doppelzangenextension) *Berl klin Wchnschr.* 1920, lvi, 192

In the treatment of fractures at the Cologne clinic the adhesive tape method of extension and the nail extension method have been entirely superseded by the use of the Schoenmann clamp. A set screw regulates the depth to which the points of the clamp are to penetrate the bone. The method is simple and there is no danger of infection.

To avoid lateral displacement double extension above and below is necessary in cases of fracture of the forearm and leg. The knee or elbow is slightly flexed and the teeth of the clamp are applied in the one case at the malleoli or calcaneus and the condyles of the tibia or femur, and in the other case at the condyles of the ulna and has taken place applied.

BRUNING (Z).

Hey-Groves, E. W.: The Application of Bone-Grafting in the Treatment of Fractures. *Lancet*, 1920, cxviii, 1048

Although the author advocates the use of bone grafts in properly selected cases, he warns against the present tendency to outrun discretion as it may discredit an operation of unquestionable merit. Axial traction and early motion of joints give good functional results in simple fractures. The tendency toward the use of sliding inlay grafts and prolonged fixation of joints in plaster is to be regretted.

Intramedullary bone pegs, which are from 1 to 2 in. in length and from $\frac{1}{8}$ to $\frac{3}{8}$ in. in thickness, have a small boss in the center to prevent their slipping too far into one fragment. This has given great satisfaction when: (1) the case is clean, (2) there is no comminution, and (3) the fracture is nearly transverse.

Autogenous grafts are preferable, although ox bone perforated by drill holes to facilitate vascularization may be used. They seem to be able to survive under septic conditions. It is important to correct deformity before the graft is inserted and firmly fixed.

Three types of tissue are encountered in the bed into which the graft is inserted: (1) latent septic scar tissue, (2) atrophy of bone ends, and (3) sclerosis of bone ends.

Operations for non-union must frequently be done in several stages: (1) the replacement of adherent or thin cutaneous scars by pedicled skin flaps, and (2) the excision of deep scar tissue and unhealthy bone ends, followed in from two to six months by the bone grafting operation. Different techniques and methods of application may be used in applying grafts to long bones.

H. W. MEYERDING

Jones, E.: The Operative Treatment of Irreducible Paralytic Dislocation of the Hip Joint. *J Orthop Surg.*, 1920, ii, 183

The author describes his modification of the Albee operation on dislocated hips when the acetabulum is shallow and the hip will not stay in place after reasonable trial by the bloodless method.

The operation consists of the turning down of a superior curved lip of bone to overhang the deficient acetabulum and maintain the reduced femoral head. The position of the overhanging lip or rim is maintained by tibial bone grafts.

Jones reports a very interesting and instructive case, that of a student 18 years of age who had had infantile paralysis when 18 months old. There was an extreme flexion adduction deformity of the hip with $9\frac{1}{4}$ in of apparent shortening. The great trochanter was 4 in. above Nelaton's line. The X-ray showed a high iliac dislocation with moderate coxa valga and practically no acetabulum; malformation of the femoral head; and marked atrophy of the shaft and right pelvis. The technique of operation was as follows:

With the patient on the Hawley table direct skeletal traction was obtained by a Steinmann pin inserted above the condyles of the femur. Two metal chains connected the pin and the Hawley foot-piece. The traction was regulated by an assistant. Flexion adduction deformity had been corrected previously by open tenotomies of the iliopsoas and adductors and extensor lemoris. The Smith-Peterson incision gave excellent exposure of the ilium and acetabulum. The iliac incision was curved to 3 in. below the trochanter and that bone was removed with a wide osteotome. The capsule

being applied to the skin surface overlying the ovaries. One was killed in three weeks, 2 in four weeks, 2 in five weeks, 4 in six weeks, 3 in eight weeks, and 4 in nine weeks. The ovaries removed were not touched with the fingers or forceps. They were placed in 70 per cent alcohol at once and run up for paraffin sections as soon as possible. The first few were sectioned serially and examined throughout. This consumed a great deal of time, and was found to be unnecessary. Therefore from the other ovaries from 50 to 75 sections were removed from each side and from the middle portion for examination, making about 150 to 200 sections from each. In the examination of sections special attention was given to the germinal epithelium, the connective tissue cortex, the blood vessels, and the follicles.

was removed only three weeks after the treatment and as there were no signs of follicles in a state of degeneration and almost no small follicles of any size, the change was so great that it could hardly have taken place in three weeks. The variation in size seemed to depend on the number and size of the atretic follicles and corpora lutea present. Both in number and size these structures varied greatly in different ovaries. In all of those examined the germinal epithelium was present and in normal condition. The connective tissue cortex varied greatly in thickness in different ovaries, even the two ovaries from the same animal presenting considerable variation. The blood vessels showed no signs of endarteritis, and as they normally have thick walls, this change would have been observed easily if it had been present.

As would naturally be expected, the greatest variation was shown in the condition of the follicles.

the treatment.

Convincing evidence of the viability of the ovum when it was discharged from the ovary was obtained in the cases of 2 rabbits which were put with a male and became impregnated five weeks after the treatment. In one case 4, and in the other 5 embryos were removed from the uterus several weeks later.

Two other animals which had become pregnant were later treated and did not miscarry, a fact

which indicated that the membrana granulosa of the mature follicles from which the corpus luteum cells are probably formed was not degenerated as it is well known that if the corpus luteum of pregnancy is destroyed in its early stages the fetus will be cast off.

On the basis of these results the author considers it a fair deduction that a 600 mg.-hour dosage of radium does not produce degeneration of the follicles of the ovaries.

C. H. Davis.

LEGAL MEDICINE

Liability of Physicians—Advising Local Physician.

Thornburg vs Long (N. C.) 101 S. E. R., p. 99

The plaintiff, Thornburg, when suffering from a swollen arm was sent by a local physician to Dr. Long, a physician in a nearby town. Dr. Long examined him, took a blood test, and came to the conclusion that he was suffering from syphilis. Thornburg doubted the diagnosis and returned to the local physician. The local physician lanced his arm and he subsequently recovered. Thornburg then sued Dr. Long for the mental and physical pain caused him by his failure to diagnose the

malady, however, that he will cure him or that he will not commit an error in judgment. The court further held that Dr. Long was not negligent, that he used the usual means to determine the nature of the patient's malady, and that his error was an error of judgment. He therefore was not liable.

The question was raised also as to whether or not Dr. Long violated his duty as a physician in communicating to the local physician the nature of the patient's disease, but the court held that since the

J. A. CASTIGNO

Implication from Collection of Hospital Fee.

Courchesne vs Brown (Texas) 216 S. W. R., p. 674.

In this case the subject under discussion was the deduction of small amounts from the wages of employees for the purpose of establishing hospital funds. The facts were as follows.

Brown was employed by Courchesne. It was Courchesne's custom to deduct \$1.00 per month from the wages of his employees to establish a fund for the payment of a physician, a nurse, and hospital fees during the illness of any of his employees. This fund was not connected with the insurance policy which Courchesne carried under the terms of the Workmen's Compensation Act.

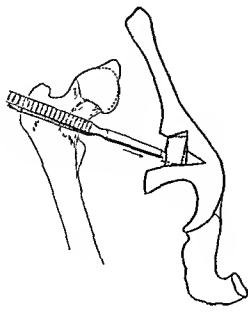


Fig. 5.

Fig. 5. The tibial transplant being forced into place. The head of the femur is remodeled.

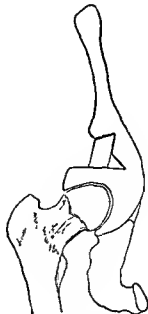


Fig. 6.

Fig. 6. The dislocation reduced and maintained by the now efficient acetabulum.

removed and massage, muscle training, and active motion were begun. Seven months after the operation there was 70 degrees of voluntary flexion. The patient walked with a cane and wore a high shoe to compensate for an atrophic shortening of only $4\frac{1}{4}$ in. On September 20, 1919, two years after the operation, the patient reported by letter that he had entered an agricultural college, was able to run a tractor, and walked without a cane.

The author draws the following conclusions:

1. In certain cases of so-called irreducible paralytic dislocations of the hip, correction of the deformity with function can be obtained.

2. Hoffa's belief, based on experiments on the cadaver, that rupture of the blood vessels and nerves must occur in long-standing cases before surgical shortening can be obtained does not hold true in the living.

3. Muscles in paralytic hips which by their contractures are able to perpetuate a dislocation at the hip are able also to perform function if the dislocation can be reduced. Therefore arthrodesis should not be the method of choice except in cases of flail hips.

PHILIP LEWIN.

Foldes, D.: Fractures of the Patella, Os Calcis, and Olecranon Treated by Fischer's Apparatus. *Surg., Gynec. & Obst.*, 1920, *xv*, 510

Fischer's method for the treatment of fractures of the patella can be applied as a conservative or as a postoperative method of treatment.

When used as a conservative method it solves the problem of the approximation of the fragments

and the mobilization of the joint without causing diastasis when the joint is flexed.

When used postoperatively it relieves the tension on the sutures by overcoming the retraction of the quadriceps muscle, permits the patient to be out of bed, and prevents separation of the fragments during

with hooks raised either by bending the steel plates or by using a greater number of plates.

A piece of hard wood, 30 cm. long, with a pulley at each end, may be substituted for the steel plate

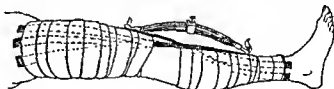


Fig. 1. Steel apparatus in place

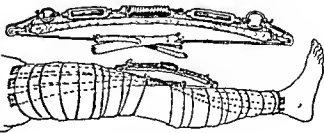


Fig. 2. Wooden apparatus

Unskilled Treatment of Injuries—Cross-Examination *Smith vs Missouri K & T Ry Co (Okla)*
185 Pac R, p 70

In this case two interesting questions were involved, namely, the liability of the party causing an injury for the unskilled treatment of a physician called by him to treat the person injured, and the subject of cross examination. The facts were as follows:

While waiting for a train belonging to the defendant railroad, Smith was knocked down by the body of another man which was thrown violently against him when the man was struck by the approaching train. Because of unskilled treatment by the physician of the railroad company, Smith's injuries were aggravated. There was no question as to the liability of the railroad company or the unskilled treatment of the physician but the railroad company contended that as long as it used due care in the selection of a physician it was not liable to Smith for the physician's negligence.

The jury in the lower court brought in a verdict in favor of the railroad. Smith appealed, first on the ground that the company was liable for the negligence of the physician it called, and second, on the ground that the court erred in permitting the attorney for the defendant to extend his cross-examination of Smith's witness beyond the scope covered by direct examination.

The upper court held that unskilled treatment by the physician called by the party causing the injury, which treatment increased the injury, will render the party causing the original injury liable for all the injuries. It held further that cross examination cannot extend beyond matters brought out in direct examination. Therefore the judgment of the lower court was reversed. J. A. CASTAGNINO.

The Treatment of Osteomyelitis—General and Special Employment. *Nelson vs Farrish et al (Minn)* 173 N W R, p 715

Nelson, the father of an 8-year-old girl, filed an action for malpractice against Drs. Farrish and Portmann for failure to make a proper diagnosis of the child's condition. The child was suffering from osteomyelitis of the radius. On November 12 Dr. Farrish was called to treat her and continued to treat her until December 3. On November 18 Dr. Portmann was called, examined the child, recommended certain treatment, and told the child's parents to call him if they wanted him again. The child grew worse and later was moved to a hospital after Dr. Farrish had been dismissed from the case. An operation was then performed by another physician.

Expert testimony was offered at the trial to show that the only treatment which will cure osteomyelitis is operation and that Drs. Portmann and Farrish, by their failure to recommend an operation, were negligent. Dr. Farrish contended that he recommended an operation but the father of the girl would not consent. The evidence in the case, however, was

in direct conflict with the contention of the doctor. Dr. Portmann contended that his employment in the case was special and not general and that he was not obliged to follow the case. The lower court entered a judgment against Drs. Farrish and Portmann. This judgment was appealed.

The upper court held that a physician called

to affect his liability for what occurred on the occasion of his visit. It held further that Dr. Farrish was called generally and was negligent in his diagnosis of the case and that Dr. Portmann was called specially but had reasonable time on his special visit to make a proper diagnosis which he did not do. Both doctors were held liable and the judgment of the lower court was affirmed. J. A. CASTAGNINO.

Infection Carried from Toe to Face. *Bethlehem Shipbuilding Corporation, Limited, vs. Industrial Accident Commission et al. (Calif.)* 185 Pac. R., p 179.

The question under consideration in this case was whether or not death due to an infection carried

employment. A streptococcal infection set in and was followed by septicæmia, erysipelas of the face, and death. The Industrial Commission held that the infection was carried from the toe to the face by external means and that the death was the result of the original injury to the toe. The company appealed on the ground that the injured toe was not the proximate cause of death, but the finding and award of the Industrial Commission were confirmed by the upper court. J. A. CASTAGNINO.

Verdict

The widow of a former employee of the Spiegel House Furnishing Company filed a claim with the Industrial Commission for the death of her husband. Her husband had come home from work complaining that he was not feeling well. A physician who was called told him he had a cold and a little fever. The next day he became worse, complained of a scab on his arm, and told his wife he knocked his arm against a corner of a dresser while showing customers through the store. The physician sent him to a hospital and a few days later he died of septicæmia.

A coroner's jury held that death was due to septicæmia caused by an injury of the arm inflicted by the corner of a dresser. The widow of the deceased was granted an award by the Industrial Commission and the award was affirmed by the circuit

makes it possible to use the hand. It allows movement of the small articulations of the fingers and prevents stiffness, ankylosis, and permanent retraction. When it is well done the hand functions well without the use of any prosthetic apparatus.

W. A. BRENNAN.

Dujarier, C.: The Treatment of Pseudarthroses of the Leg (*Traitement des pseudarthroses de jambe*) *J. de chir.*, 1920, xvi, 31.

In 130 cases of pseudarthrosis operated upon by Dujarier there were 24 cases in which the leg was involved. Only 3 were cases of closed fracture without loss of substance. In the great majority the loss of bone amounted to 5 or 6 cm., and in some instances was as much as 10 cm.

In the treatment of pseudarthroses without loss of substance reduction with leverage and coaptation of the fragments is sufficient, but in many cases considerable traction must be applied. Metallic plates have not been used in securing coaptation as clips have been found adequate.

When there is extensive loss of substance grafting is necessary. Dujarier used grafts according to the Albee technique in 12 cases. The graft is generally cut in the vicinity of the lesion to be repaired. In some cases more than one piece of bone may be necessary. It does not seem to make any difference whether the periosteum is removed with the bone or not.

Suppuration did not occur in any of Dujarier's 12 cases and satisfactory consolidation was obtained in all except 1. In 3 cases the graft fractured five or six months after the operation. The fracture was always in that part of the graft which corresponded to the area of loss of substance. Grafts seem to be especially fragile after they have been inserted for this length of time. Reconsolidation was obtained in these cases by continued treatment. It is possible that the fractures may have been due to the fact that the grafts were taken from bones affected by slight osteoporosis.

Of the 12 cases operated upon by Albee's method complete consolidation was obtained in 10. In 6 cases of slight loss of substance in which a graft was inserted according to a technique other than that used by Albee consolidation resulted in 5 and suppuration in 1. A graft with periosteum was used successfully in 3 cases.

In the 24 cases fractures due to suppuration occurred in 2, successful results were obtained in 20, and 2 cases are still under treatment. In most instances the consolidation was obtained in from two to four months.

W. A. BRENNAN.

Bastos Ansart, M.: The Treatment of Pseudarthrosis of the Neck of the Femur by Albee's

In all pseudarthroses, and especially those of the neck of the femur, the current method of treatment is

the application of osseous transplants. The use of bone grafts obtained from the same patient is more rational from a physiological standpoint than the employment of ligatures, screws, or spikes of ivory or other materials. The osseous transplant continues to live, so that in addition to giving me-

ties the operation and improved the ultimate results.

The author's adaptation of the Albee method is as follows:

The upper extremity is perforated with a special variety of bone drill, beginning opposite the base of the neck and extending medially and upward within the neck. A bone graft is then taken from the tibia by means of a twin saw and dressed with a die-stock the same size as the drill which has been used so that it exactly fits the channel in the neck of the femur. This plug may be inserted with perfect adjustment and without the use of force.

The causes of non-union in fractures of the neck are chiefly physiological, i. e., low vitality of the fragments and malposition of the fractured surfaces. The Albee method brings about ideal coaptation of the fracture surfaces.

The author does not claim to have improved the original technique nor to have devised any important additional steps, but calls attention to these points which he regards as of special value.

1. Placing the leg previously in internal rotation and maximal abduction so that apposition of the fragments may be obtained most easily. As a rule a plaster cast should be applied afterward to sustain the parts in this position.

2. Inserting the graft exactly in the edge of the neck, low down at the superior end of the diaphysis, and directing it obliquely toward the center of the head or somewhat higher.

W. R. MEERER

ORTHOPEDICS IN GENERAL

Elmer, W. G.: The Operations We Have Found Most Satisfactory in the Orthopedic Department of the University of Pennsylvania. *Pennsylvania M. J.*, 1920, xxii, 394.

The family physician is the first one to see and recognize an acute illness which, if neglected, may lead to crippling deformity. He is also the first to perceive congenital abnormalities which require early attention by the orthopedic surgeon.

Cases of tuberculosis of the hip, knee, ankle,

chief objects of treatment are the prevention of crippling deformity during repair and maximum function after cure.

When the completely separated head of the femur acts as a foreign body in the joint it is best to remove it.

GYNECOLOGY

UTERUS

Delassus, A. Trachelopexy in the Treatment of Severe, Rebellious Genital Prolapse (Sur la trachelopexie recti musculaire dans le traitement des prolapsus g nitaux graves et rebelles) *Revue fran aise de gyn cologie et d'obst trique* 1920, xv, 49

The author describes Jacob's classical operation for removing the body of the uterus and fixing the remaining cervix to the abdominal wall. He has done the operation about 50 times and has modified it slightly.

Emphasis is placed upon the importance of preventing hemorrhage. In one of the author's recent operations a voluminous hematoma developed. This was due to the slipping of a ligature about the ovarian artery. It was necessary to tie this artery separately.

Experience has shown that genital prolapse may recur even when a trachelopexy had been done with the most careful technique. The primary operation should therefore be complemented by a plastic perineal operation, or a larger portion of the tract should be removed, such removal being followed by a colpocoele rather than a trachelopexy. Both of these procedures should be executed in one stage as patients will not usually submit to a second operation.

The immediate operative results are almost always good. In the 50 operations there was only 1 operative death. This was due to peritonitis. Local suppuration sometimes persists and is the cause of much trouble.

The remote operative results are encouraging. The operation should be reserved, of course, for cases of prolapse which have resisted other treatment. A total prolapse of the vagina, bladder, and rectum may occur postoperatively because the stump falls from the abdominal wall, becomes extraordinarily long (in one of the author's cases the stump was 12 cm. in length), or the vaginal tissues have undergone considerable relaxation.

The points to which the author draws particular attention are (1) the isolation and separate ligation of the utero-ovarian vessels, which should never be ligated *en masse*; and (2) the fact that all complementary plastic procedures should be done by the lower route at the same time that the principal operation is done by the abdominal route.

W. A. BRENNAN.

Bell, W. B. The Surgical Treatment of Prolapse of the Uterus and Vagina. *Lancet*, 1920, cxcviii, 993

The author's observations and conclusions are based on approximately 400 cases in which 99 per cent of cures were obtained and the mortality

amounted to only 0.5 per cent. The operative treatment was responsible for the 2 deaths only indirectly.

The author classifies the clinical types of prolapse as "congenital" prolapse; puerperal retroversion and flexion, with slight, actual, or potential descent; vaginal prolapse, and prolapse of the uterus and vagina during or after the reproductive period.

Congenital prolapse is differentiated from the condition sometimes seen in infants with spina bifida. It occurs soon after puberty, is due to inherent defects in the pelvic floor, and must be distinguished from congenital hypertrophy of the vaginal cervix. Six patients with this condition were treated by reconstruction of the posterior segment of the peritoneal aspect of the pelvic floor and suspension of the uterus by a modified Gilliam operation.

Puerperal retroflexion occurs in the first stage of a large majority of all cases of acquired prolapse of the uterus, and should be treated as such. When uncomplicated by a vaginal laceration, a modified Gilliam operation alone is sufficient. Vaginal lacerations may occur at subsequent labors and necessitate further operative treatment, but the uterus will always maintain the good position obtained by a properly performed modified Gilliam operation if it is not delayed too long and a vaginal prolapse has not stretched the supravaginal cervix.

Vaginal prolapse may occur in the case of a normally placed uterus. In most cases it is represented by a large cystocele, rarely by a rectocele, and still more rarely by a cystocele and rectocele. Pelvic infection or some other pathologic cause obstructing the descent of the vaginal fornices sometimes may prevent stretching of the supravaginal cervix or prolapse of the uterus. Uncomplicated vaginal prolapse will respond to plastic vaginal operations. This condition is not common, however, and is usually associated with an abnormality of the uterus requiring further operative treatment.

Prolapse of the uterus and vagina may vary in all degrees from partial descent of one or both to complete procidentia. Before the menopause prolapse of the uterus and vagina, including prolapse of the congenital type, should not be treated by the "interposition" operation, ventrifixation, or peritoneal ventrisuspension operations because they frequently interfere with subsequent pregnancies. Repair of the vagina and perineum, amputation or repair of the vaginal cervix, and suspension of the uterus by a modified Gilliam operation have been found by the author to be the best procedures. In cases of marked prolapse, that is, procidentia, and especially in congenital prolapse, reconstruction of the peritoneal aspect of the posterior segment of

Fromme, A.: The Cause of Growth Deformities (Die Ursache der Wachstumsdeformitäten). *Deutsche med. Wchnschr.*, 1920, xlcvi, 169

The study of cases of late rickets which was endemic last winter and in which numerous deformities such as knock-knees (14 per cent of the cases), bow-legs (13 per cent), and coxa valga were observed, has brought the author to the conclusion that the primary cause is to be found in a pathologic change of the bones. The secondary growth changes, however, he attempts to explain by a theory which will be applicable to all disturbances of growth.

Such changes he believes are induced by a rapid increase in the body weight which is too great for the weight-bearing capacity of the bones, especially those of the lower extremities. The deformities occur most commonly at the time of the greatest growth, i.e., during adolescence, as during this period the growing zone is broadest because of hypertrophy of the epiphyseal cartilage and therefore is most seriously influenced by trauma. This predisposition to traumatic influences is increased especially by rickets and late rickets. As a result of uniform compression of the growing zone the longitudinal growth is retarded and the joint areas are broadened out. Then, as a result of unilateral injury, deformity occurs.

Osteochondritis, particularly the osteochondritis coxae juvenilis, and the formation of joint bodies during the growing period are also explained by this theory. STETTNER (Z)

Magnus, G.: The Treatment of Rachitic Deformities in General Practice (Die Behandlung der rachitischen Verkrümmungen in der allgemeinen Praxis). *Therap. Halbmonatshefte*, 1920, xxiv, 4

Orthopedic treatment of rachitis should not be begun before the disease itself has terminated, i.e., not before the fourth year of life. By the method described the bone to be treated is intentionally rendered atrophic, poor in calcium, and soft by the application of a plaster cast. The legs in their

position are encased in plaster for five or

extremities again placed in casts for another period of six weeks. The second cast is made heavy purposely so that the atrophy will disappear.

Thirty cases were treated by this method at the Marburg clinic. B. VALENTIN (Z).

Lovett, R. W.: The Tripod Method of Walking with Crutches as Applicable to Patients with Complete Paralysis of the Lower Extremities. *J Am M Ass.*, 1920, lxxiv, 1306

Complete paralysis of both lower extremities is not necessarily a bar to all forms of ambulatory activity. If a cadaver is stood upright, the knees flex and the body crumples to the floor, but if the knees are held rigid by splints and it is steadied at the pelvis, the trunk falls forward. Similarly in the case of a patient with flaccid paralysis whose knees are fixed in the extended position the erect position can be maintained without crutches only if the *gluteus maximus* is able to prevent flexion of the trunk. Hence the muscles which are most important in maintaining the erect position are the quadriceps femoris and the *gluteus maximus*.

If in case of complete paralysis of the lower extremities the knees are kept from flexing by simple splints such as calipers, the loss of the *gluteus maximus* can be compensated by using crutches in the author's tripod walking. The crutches are placed apart and well forward to form the two anterior points of the tripod, while the third point of the tripod is formed by the patient's body which is inclined forward at its upper end with the feet well behind. This position is stable for two reasons: the base of support is a large triangle, and the body is stable in the over-extended position because hyperextension of the hips is checked by the "Y" ligament of Bigelow and the center of gravity falls in front of the hip joints and keeps them extended and firm.

Now, provided there are no contraction deformities, the patient can easily stand unsupported. He must be taught confidence to re-learn the sense of upright equilibrium. Walking is accomplished by placing the crutches forward one at a time and then jerking the feet forward together by a body movement, or, if there is slight power in the iliopectors,

which pass down from the groin and are bent at right angles into the heel of the shoe, with or without a stop-joint at the knee. No pelvic band is needed.

Lovett reports several cases, including cases of poliomyelitis and fractures of the spine.

R. G. PACKARD.

SURGERY OF THE SPINAL COLUMN AND CORD

Meyerding, H. W.: The Treatment of Tuberculosis of the Spine. *Minnesota Med.*, 1920, iii, 245.

Of 405 patients with Pott's disease observed at the Mayo Clinic from September, 1912, to January, 1919, 100 were operated on by a modified Albee bone-grafting method.

Nine of these patients were between 1 and 10 years of age; 5, between 11 and 20 years; 56, between 21 and 30 years; 19, between 31 and 40 years; 7, between 41 and 50 years; and 4, between 51 and 60 years. The average age was 25 years.

Sixty-five per cent were males and 35 per cent females. Symptoms had been present in 8 cases for

Ley, C.

Gynec, 95

The statistical record presented is based upon a study of 60 cases of ovarian cancer, in 25 of which the ovary was involved primarily and in 38 secondarily. In 3 of the latter the primary growth was in the opposite ovary. Ley classifies these neoplasms according to their histogenetic origin into

1. Oophoric (1) arising *de novo*, site questionable, (2) arising from pseudomucinous cysts, and (3) arising from teratomatous (dermoid) cysts.

2. Epioophoric and paroophoric (1) arising from wolffian relics in the ovary, the hilum of the ovary, or the broad ligament

He believes that the frequently occurring pseudomucinous cyst is teratomatous in origin, representing the posterior end (hind gut) of the embryo in the same way that the so-called "dermoid" represents the cephalic end. His reasons for this opinion are: (1) that the epithelium is typical of gut and does not resemble that of the normal ovary, (2) that loculi lined by skin containing hair, etc. are found not infrequently, (3) that unstriped muscle is frequently found in the walls of these loculi, and (4) that loculi lined by cells of this type are not uncommon in "dermoid cysts."

Nine of the 25 cases of primary ovarian carcinoma were of pseudomucinous origin and 16 of wolffian origin (8 unilateral and 8 bilateral).

The study of the 25 cases of primary ovarian carcinoma is summarized as follows:

1. The majority arose either in the wolffian relics or in pseudomucinous cysts (hypoblastic teratomata).

2. The age incidence of the wolffian type was a decade later than that of the pseudomucinous type.

3. The malignancy as demonstrated by metastasis was much greater in the wolffian than in the pseudomucinous type.

4. In both types metastasis was most frequently peritoneal.

5. In the wolffian type the lumbar glands were involved first, and the iliac, celiac, and pancreatic glands later.

6. No pseudomucinous cyst gave rise to glandular metastasis.

In the 38 cases of secondary ovarian carcinoma the site of the primary growth was: (1) the colon and rectum, 11 cases, (2) the stomach, 10 cases, (3) the gall-bladder, 2 cases; (4) the extrahepatic bile passages and caruncula major of Santorini, 2 cases, (5) the pancreas, 2 cases, (6) the breast, 4 cases, (7) the ovary, 3 cases; (8) the suprarenal gland, 2 cases, (9) the uterus, 1 case, (10) the kidney, 1 case. The ovarian secondary deposits were bilateral in 19 cases and unilateral in 19 cases. In the latter the primary growth was in the opposite ovary in 3 cases, so that carcinoma was bilateral in 22 cases and unilateral in 16.

The study is summarized as follows:

1. The statistics give no proof that ovarian metastasis is more frequently associated with primary carcinoma in any particular site.

2. The ovarian metastases were unilateral and bilateral in an equal number of cases.

3. The method of invasion was by implantation in 31 cases (81.5 per cent), direct in 3 cases (7.9 per cent), and by permeation of lymphatics in 3 cases (7.9 per cent).

4. Tumors of clinical significance occurred in 10 cases (28.9 per cent).

5. In 7 of these 10 tumors the growth in the ovary overshadowed the primary growth.

CAREY CULBERTSON

EXTERNAL GENITALIA

Plondke, F. J.: Vaginal Drainage. *Minnesota Med* 1920, 14, 251.

All cases of salpingitis should be regarded as septic and for that reason if any pus is spilled during the operation drainage should be instituted. The author contends that abdominal drainage is inadequate and that vaginal drainage by his method is better because it is more efficient and more comfortable and has none of the objectional features of abdominal drainage.

Before the abdominal operation is begun and after the vagina has been swabbed with iodine a curved

curved forceps are pushed forcibly up into the cul-de-sac by an assistant until the operator can extricate the point. The jaws of the forceps are then opened in order to stretch the orifice. Into the open forceps are passed two strips of gauze and a rubber tube. These are pulled down into the vagina, their upper ends being left in the cul-de-sac. The tube is attached to the back of the uterus with a catgut suture and the abdomen then closed in the usual manner. The gauze is withdrawn in about three or four days but the tube is allowed to come out spontaneously. Convalescence rarely takes longer than two weeks. The method may be adapted also to cases of ruptured appendix.

The author prefers this technique because:

1. It is simple and comparatively easy.

2. By preliminary preparation of the vagina the entire procedure is rendered surgically clean.

3. The attendant who manipulates the forceps in the vagina need not be "clean" and will not disarrange the aseptic covering.

4. If the tube is sutured to the posterior surface of the uterus it cannot come away until the catgut stitch is absorbed. It then comes away easily and without causing pain.

5. It does not require the insertion of the assistant's fingers into the vagina to act as a guide and

parents or other relatives to be instructed regarding the method. In this way much better results are obtainable and the parent who is alarmed on seeing the child on the frame for the first time will later become a firm believer in the value of the procedure.

While the time of recumbency cannot be given definitely, a year will usually suffice, especially if hyperextension and heliotherapy are combined with fresh air and proper food and nursing. In surgical cases the time of recumbency is lessened, in most of the cases at the Mayo Clinic the patient is up and about with a cast or brace in six weeks. Care must be taken not to fracture or loosen the graft as during recumbency and when the patient is turned as well as when he is up and about the spine must be kept from rotation and flexion. Nurses are taught to turn the patient by rolling, the shoulder and thigh being grasped so as to prevent twisting of the spine. A well-fitted cast, split before operation and padded and re-applied immediately afterward, is the best means of obtaining fixation in bed. A stiff bed should be used, however, and the spring re-inforced with transverse boards. During the sixth week the brace is applied while the patient is in bed and he is allowed to become accustomed to the upright position on a back rest before he sits in a chair. Within the next few days he begins walking in most instances and is then cautioned against removing the brace unless he is recumbent.

It is obvious that the reported results vary according to the interpretation of what constitutes a cure. It is considered desirable to express the value of treatment in terms of improved and unimproved conditions. Although the deformity and even the evidence of psoas abscess remain, the patient should be considered as benefited by operation and is so reported in this series if he was relieved of pain and able to return to activity.

Eighty-six per cent of the patients in the series have been relieved of clinical symptoms. Three patients are unimproved; 3 have not been heard from. Eight patients have died since operation. These were:

1. A child, aged 4, who had had symptoms for two years, presented a kyphos, was operated on, and recovered sufficiently to attend school. Death due to tuberculous meningitis was reported eighteen months after the operation.

2. A woman, aged 26, who had had symptoms five years. This patient died of tuberculous peritonitis twenty-two months after operation. The postmortem examination showed the graft ankylosed and the spine healed.

3. A man, aged 51, who had had symptoms for two years. The cause and date of death were not given.

4. A woman, aged 26. Death was due to tuberculous peritonitis. The patient had been dismissed with a brace, apparently improved.

5. A man, aged 35, who had had symptoms for three years. Death was due to military tuberculosis, tuberculous adrenals, tuberculous spine, etc.

6. A man, aged 24, with symptoms of eighteen months' duration. Death occurred six months after operation, the cause is not known. A psoas abscess was present at the time of operation.

7. A man, aged 24 who had had symptoms for six years. Death occurred from pulmonary embolism the twelfth day after operation while the patient was still recumbent and as he was reaching out for a book.

8. A man, aged 39, whose condition was complicated by an old pulmonary tuberculosis and who had had spinal symptoms for one year. Death occurred from tuberculous meningitis thirteen days after the operation.

The following summary is given:

1. The fusion operations of Hibbs and Albee for tuberculosis of the spine have given a means of obtaining internal fixation which shortens recumbency, prevents further deformity, and tends to hasten healing.

2. The disease in the vertebral bodies is not eradicated by the fusion operations and relief of symptoms does not mean cure.

3. General anti-tuberculous measures are of primary importance and should be insisted on.

4. Recumbency and external fixation are still necessary adjuncts to successful treatment and should be carefully carried out.

5. Abscesses should be let alone unless they cause discomfort or pain or are secondarily infected, when they should be carefully aspirated and injected.

6. A primary focus, which may be determined in a small number of cases, indicates a general disease of which the spinal symptoms are manifestations.

7. Children under 5 years of age and adults with active pulmonary lesions and sinuses are poor risks.

8. Paraplegia does not contra-indicate operation for fixation.

Climenko, H.: The Diagnosis of Spinal Cord Tumors. *Md. Rev.*, 1920, xcvi, 903

The diagnosis of spinal cord tumors is more of an art than a science. It is very difficult to tell with certainty whether one is dealing with a neoplasm, a systemic disease, or a multiple lesion of infectious origin. The diagnosis of the vertical level of a lesion of the cord is much easier than the diagnosis of its transverse involvement.

Bruns states that it is difficult, if not impossible, to differentiate between intradural and extradural tumors. For all practical purposes, however, a differentiation between an intramedullary and extramedullary tumor is sufficient.

The author reports three cases of spinal tumor, describing the operations and the patient's subsequent condition.

Pain which traveled along the distribution of a root was a symptom common to all three cases. In two of those in which the tumor was extramedullary the symptoms were those of irritation, while in the remaining case, in which the tumor was intra-

MISCELLANEOUS

Wright, F. Hypertension in a Woman at the Menopause. *Med Clin N Am*, 1920, III, 1735

Wright reports a case in which corpus luteum injected muscularly caused uterine hemorrhage in a woman of 50. The patient developed excessive menstruation, high blood pressure, vertigo, and severe headache, all of which became gradually worse over a period of seven and a half years.

As there were no renal findings radium was introduced into the uterus to induce the menopause, with the result that all of the symptoms were greatly relieved. The history is summarized as follows:

1. A high blood pressure was tolerated for some time.

2. Nervous influences distinctly affected many of the symptoms.

3. Arterial changes developed gradually, as shown in the eye, the coronary arteries, the uterus, and possibly the abdominal aorta.

4. The kidney had little to do with the difficulty.

5. The endocrine influence was a factor but probably only one of several.

6. Cessation of menstruation in such cases is warranted if the progression of symptoms demands it.

EUGENE CARY

Robins, C. R.: The Operative Treatment of Pelvic Inflammation. *South M J*, 1920, XIII, 368

The author's conclusions are based on a study of more than 500 cases of pelvic inflammation. These cases he divides into two classes: (1) puerperal or post-abortum inflammations, and (2) gonorrheal inflammations. The first class of cases he treats conservatively in the acute stages and merely drains the abscess pockets. Regarding the second class he states that operation may be performed at any stage but does not say definitely whether he considers operation desirable.

In the first class of cases, operations in which only the tubes are removed, the ovaries are freed from adhesions, and the uterus is suspended anteriorly. Emphasis is laid upon the importance of preserving menstruation.

Robins therefore differs from those who believe that chronic cases of pelvic inflammation should be treated by local rather than surgical measures unless a radical operation is contemplated. W. H. CARY.

Robins therefore differs from those who believe that chronic cases of pelvic inflammation should be treated by local rather than surgical measures unless a radical operation is contemplated. W. H. CARY.

Bland, P. B.: Mercuric Chloride Poisoning from Vaginal Injections—Two Fatal. *J Am M Ass*, 1920, LXXIV, 1227

Vaginal irrigations are of value in the local treatment of acute and chronic affections, but carelessly given may cause extensive local organic destruction and occasionally death. The author reports three cases as follows:

CASE 1. The patient was a woman 29 years of age. Menstruation had begun at the age of 20. The menstrual periods had always been regular, recurring every twenty-eight days, and were not associated with pain. The discharge continued for four or five days, was always rather profuse, and frequently contained clots. The patient married at the age of 21 and had had three pregnancies, all of which continued to term and terminated normally. Suturing had never been necessary.

Four weeks prior to the patient's admission to the hospital she had taken a copious douche of hot water to which two "blue tablets" (mercuric chloride) had been added. These were employed to prevent conception. Very soon after the irrigation violent burning pain began in the vulva and vagina. Various agents to overcome this pain were prescribed by the patient's family physician but were of no benefit. The following day the

which frequently contained long shreds and membrane.

Four weeks after the douche was taken the vulva were still somewhat swollen and inflamed. The vagina showed most striking changes. The canal was almost completely closed. The mucosa had entirely sloughed away and the tube was lined by a red, resistant, tender, granular membrane. There were no marked constitutional symptoms at any time. Operative measures were recommended for the vaginal stenosis but were refused. No further record was obtained of the case.

CASE 2 was that of a woman aged 21. The patient first menstruated at the age of 17, one year subsequent to her marriage. Menstruation had always been regular and of the twenty-eight-day type. The flow was scanty and extremely painful. The last period occurred approximately two months previously.

Two days before her admission to the hospital the patient took a douche in order to prevent con-

temporary relief and the following day the vulva became greatly swollen and discolored. The pain was intense. Shortly afterward a profuse seropurulent discharge appeared which later contained particles of tissue.

The patient was rather delicate and was suffering great agony. The pupils were normal. The lips were parched, dry, and cracked. The tongue and pharynx were extremely red and dry. The mucous membrane throughout the throat was intensely injected. The lungs were normal. The heart presented a moderately loud systolic murmur and

(3) in some cases, the return of faradic contractility; (4) the disappearance of objective sensory disturbances; and (5) voluntary movements.

Of these signs of regeneration, Pollock considers the disappearance of the reaction of degeneration, the return of objective sensibility in the isolated supply of a peripheral nerve, and the return of motion the only certain signs. The sensory and motor signs are the only constant signs. The others are suggestive, but not positive. The only objective sensory phenomenon which precedes the return of motion is pain when the isolated supply of the nerve is pinched. Sensibility to pain and to touch returns simultaneously.

E. C. ROBISHIEK

Stookey, B.: The Technique of Nerve Suture. *J Am M Ass.*, 1920, lxiv, 1380.

On the utmost consideration of minute points of technique, more exacting perhaps than in almost any other field of surgery, may depend in a large measure the ultimate results of operations on the peripheral nerves.

By beginning the incision below and extending it upward much of the troublesome venous bleeding due to cutting of the veins as the incision is increased may be avoided. When possible, the superficial scar should be excised. The skin edges should be well undermined so as to include the fatty fascial layer and the fat brought with the skin edges into the new line of closure. The flaps should be prepared for closure before the search is made for the nerve. All bleeding points should be tied and the undermined edges packed with gauze. Unless this is done before the nerve is sutured the manœuvring that is necessary in the preparation of the flaps may derange the sutures.

When the deep scar is extensive it is best to identify the nerve both above and below in normal areas, selecting, if possible, points within the field which offer anatomical guides to the nerve which is sought.

In following the nerve from above downward and from below upward care must be taken to safeguard the delicate branches to adjacent muscles. The nerve may be retracted conveniently by passing moist tapes about 1 cm. wide around it and clamping the ends of the tapes with artery forceps. The weight of the forceps will usually be sufficient to hold the nerve in any desired position.

When a smooth bed for the nerve cannot be made, a small part of a muscle belly (not a cut and raw muscle surface) may be sutured so as to form a smooth surface by its fascial covering, or a fatty flap may be passed around or under the nerve. A

of the nerve in order that constriction about the nerve may be prevented.

For stay sutures the author prefers No. 00 plain catgut. Fine silk is the best material for grafts and

epineural stitches in end-to-end suture. The silk should be very fine, preferably Corticelli No. AAA containing three strands. The strands should be untwisted, separated, waxed, and passed on fine curved or straight needles. All nerve sutures should be tied very carefully with the forceps.

The author's technique for end-to-end suture is described as follows:

A No. 00 plain catgut suture is placed at equal distances on each side of the nerve, more than the epineurium being included in the stitch. By these sutures the nerve in its deeper parts is brought together, hæmorrhage between the nerve ends is avoided (the amount of scar between the nerve ends being thereby diminished) and tension is taken off the finer epineural sutures. Axial rotation may also be prevented, particularly if the sutures are placed before the excision of the intervening nerve scar is completed.

Silk epineural sutures are then placed on the anterior surface between the two stay sutures and tied so that the epineural edge is everted. By reversing the two catgut stay sutures, i.e., by passing the one over and the other beneath, the under surface is readily brought into view and sutured in like manner.

Transposition of the nerve may permit the correction of defects which otherwise might prevent end-to-end suture. A nerve may be freed and raised out of its bed for quite a distance without interfering with its nutrition. In transposing, care must be taken to safeguard nerve twigs and prevent the formation of sharp angles and kinks.

A few cases of successful grafts have been reported in France. The technique of grafting is such that unless the operation is done by a surgeon with considerable practice the results may be disappointing. Success depends in a measure on the accuracy with which the grafts are brought end on and in precise contact with the cross area of the central and distal stumps.

After the nerve has been freed from scar tissue and the nerve ends have been successively incised until a satisfactory cross area is obtained, one or two stay sutures are passed at the proper level before the continuity of the nerve is completely severed in order to hold the nerve in alignment, prevent rotation, and help in the fixation of the nerve ends during suture.

The distance to be bridged having been accurately measured, a skin nerve is laid bare over the desired length and fine waxed silk sutures are passed in accordance with the distance to be bridged. The nerve segments are cut and picked up by covering them with a moist cotton pad. If the cotton pad is carefully placed over the nerve and sutures they adhere to the moist cotton and each segment may thus be lifted from the wound and placed in the operative field. By this means the segments of the nerve are not handled and the nerve may be manipulated into its proper position for suture with the least trauma.

H. A. McKIMM.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Cornell, E. L., and Stillmans, A. W.: Syphilis in Pregnancy and Labor. *Am J Syphilis*, 1920, IV, 342

From a study of 100 cases of syphilis in pregnancy and labor...

...the Chicago Clinic is given a field this work

had been tested. Of these, 2 gave a strong positive and 1 a slight positive reaction (4.34 per cent). All of the positive reactions were those of colored women, and as there were 6 colored patients, 50 per cent of the total number were syphilitic.

nancies resulted in abortion or stillbirth. It is

care. In many instances also it may be traced to other causes such as poor teeth, infected tonsils, chronic appendicitis, low-grade gall-bladder disease, etc. Among the private patients, 19.6 per cent gave a history of abortion or stillbirth.

EDWARD L. CORNELL.

Hoffmann, K.: Appendicitis in Pregnancy (Zur Frage der Appendicitis in graviditate). *Arch f. Gynæk*, 1920, cxvii, 230

From a study of 100 cases of appendicitis in pregnancy...

size of the uterus, and the elevation of the cæcum

author recommends early operation for the first attack of appendicitis during pregnancy as well as

for recurring attacks. The site of the incision should be determined from the clinical symptoms and signs. RAESCHKE (Z).

Tweedy, L. H.: The Treatment of Antepartum Hæmorrhage. *Med. Press*, 1920, n.s. cxix, 303

In opening a discussion at the Royal Society of Medicine Tweedy stated that a comparison of the results in accidental hæmorrhage is difficult because in the compilation of different statistics different standards have been adopted. In the Rotunda

master is not summoned unless his presence is required in the interest of the patient. Therefore many insignificant bleedings escape the records. During his mastership of the Rotunda, Tweedy reported only 49 cases of accidental hæmorrhage and 45 of unavoidable hæmorrhage in 13,024 deliveries. In the extern maternity there were 47 cases in 15,543 deliveries.

On the other hand, Sir William Smiley, assistant

physician at St. Mary's Hospital, Manchester, has

recovered under the measures applicable for the condition in its less severe form (rupture of membranes, etc.). Seven died in spite of this treatment and 15 were dealt with by more radical procedures. From these figures Tweedy infers that there were certainly 22 serious hæmorrhages, but that the remainder might be classed with most of Sir William Smiley's cases as "of little consequence."

Among Tweedy's 49 patients 22 were in serious danger and were treated by the use of the vaginal plug. He lost 2 hospital and 7 extern maternity patients, 5 of whom were treated with the plug. The 2 hospital deaths were due probably to intraperitoneal hæmorrhage for in one case not more than a pint and a half of blood poured into the uterus, and in the other the patient's condition improved while the plug was in place and death did not occur until after the completion of the third stage three hours later. From 1913 to 1915, during which time Tweedy was again at the Rotunda Hospital, 23 cases of accidental hæmorrhage were treated. By that time the possibility that accidental hæmorrhage might arise as a result of pregnancy toxæmia had been established. Cesarean section was therefore performed when the double complication was encountered in a severe form.

clinical picture of hyperthyroidism are brought out. A normal person shows no reaction whatever or only a very slight reaction.

The epinephrin test is of value in distinguishing cases of true hyperthyroidism from cases of tuberculosis with a clinical resemblance to Grave's disease, and indicates the degree of toxicity in early exophthalmic goiter. It is an extremely simple and inexpensive test which requires little time and is not at all uncomfortable. The features of the reaction are sharp, clear, and characteristic.

M. H. KAHN.

MacCarty, W. C.: A Mathematical Terminology for Neoplasia and Its Significance. *Northwest Med.*, 1920, xix, 113.

Although neoplasms have been recognized since the beginning of recorded medical history, our real knowledge of tumors, especially cancer, dates back to Hippocrates. The cellular nature of the growths, however, was not known until the time of Johannes Mueller and Rudolph Virchow. Much has been written but little real knowledge has been added to that of fifty years ago.

The idea that neoplasms originate in acquired or inherited rests is still prevalent even among expert pathologists. Some persons consider neoplasia a thing apart from cellular regeneration or hyperplasia; that it represents some intrinsic cellular abnormality or a disturbance of body control over growth.

Nature provides for the regeneration of human tissues by direct division of specific tissue cells and division of reserve cells set apart for the purpose of regenerating specific tissues by the process of multiplication, specialization, and differentiation.

During chronic destruction of tissues the reserve cells react in a definite manner characteristic of living cells; they become hypertrophic, hyperplastic, and migratory. This may be interpreted as hyperactivity against antagonistic forces, increase of mass

The cells of each tissue must be regenerated during life or must be so plentiful that partial destruction will not be fatal to the whole communism. Hypertrophy, hyperplasia, and migration, which are known to occur in at least eleven tissues of the human body, may be hypothetically applied to all known tissues, although some are so highly differentiated and specialized that they have no power of

biological reactions, and degree of cellular differentiation must be known in each case of regeneration of tissue since they are important in determining

the limits of the neoplastic process and hence in arriving at a prognosis.

Neoplastic cells reproduce themselves slowly or rapidly. Sometimes they become rapidly differentiated into adult tissue cells, for which they were originally intended as regenerative (textoblastic) cells. Sometimes they become incompletely differentiated and at other times remain absolutely undifferentiated. All neoplasms therefore may be divided into three groups: textomata, pseudo-textomata, and blastomata.

Textomata are neoplasms composed of one or more completely differentiated tissues. Such tumors are very slow in growth as a result of rapid and complete differentiation into adult tissue cells. Detrimental effects are produced usually by pressure or interference with the blood supply of surrounding organs or tissues.

Pseudo-textomata embrace all neoplasms composed of partially differentiated cells resembling the adult tissue cells; for example, adenocarcinoma. Clinically they have the detrimental qualities of textomata and also those of direct invasion and metastasis.

Blastomata include all neoplasms composed of undifferentiated cells regardless of their origin, which is usually indeterminable except by location. If there are any morphological characteristics suggesting normal adult tissue, the neoplasm should be classed as a pseudo-textoma. These are clinically malignant by virtue of their completely undifferentiated cells. Because of their more primitive type they are governed by the laws of cells rather than the laws of multicellular organisms. They are cytotypic, not textotypic, and their power of reproduction and migration is greater.

The most important factor relative to blastomata is their benignancy or malignancy. This is dependent upon the rapidity of growth, degree of cellular differentiation, encapsulation, locality, and migration of cells. The natural defensive mechanism of the individual possessing the growth, which is also an important factor, is not sufficiently understood, although certain facts with regard to it, such as lymphocytic infiltration, fibrosis, hyalinization, and calcification, are known. The importance of these and other yet undiscovered defensive reactions is a subject for further study.

Textomata are benign, pseudo-textomata are less
blast-
less

M. R. HOON.

Cleland, J. B., and Paul, N.: Rodent Ulcer and Allied Growths: An Analysis of 60 Australian Cases. *Med. J. Australia*, 1920, i, 407.

Rodent ulcers are more prevalent in Australia than in Great Britain. The majority of skin neoplasms, and certainly the rodent ulcer group, are of epiblastic origin. In spite of this uniformity of origin and presumed equality of potentialities, how-

The children were born alive except in 1 case in which 3 were stillborn. Repeated abortions are not necessarily associated with a positive Wassermann. Abortion had occurred previously in 6 cases, but in only 1 more than once. In 7 of the 12 cases there were other abnormal conditions which might be the cause of the abortion. The authors feel justified in saying that syphilis was not the cause of the abortion in a case of adherent caesarean scar and in another of fibroid polyp. In a case of retroflexion of the uterus and a case of obstruction of vessels in

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The patient had had a caesarean section about a year previously because of a contracted pelvis. In

In their conclusions the authors further correlate their findings on the etiology. In 18 per cent of the cases accidental or reflex causes were present. In 25 per cent there was general disease of the mother, disease or displacement of the maternal genital organs, and gross abnormalities of the fetus or placenta (other than those due to hemorrhage or infarction). In 12 per cent of the cases a positive Wassermann reaction was obtain, but the influence of syphilis as the actual cause of the abortion may be judged as nearer 8 per cent. The figure for the group of self-induced abortions is probably not less than 20

den increase in the size of the abdomen. The condition was at first thought to be hamatometra, but on palpation the uterus was found to be small in retroflexion, and without any gestation changes. A medianly situated neoplasm led to a diagnosis of malignant ovarian tumor of rapid growth.

On laparotomy a macerated 5-months fetus enveloped in an amniotic sac adhering to the intestine was discovered in the peritoneal cavity. The placenta was adherent and fixed in the right iliac fossa. The ablation of the placenta, which was done without difficulty and without hemorrhage, was followed by hysterectomy.

In the scar of the caesarean incision the mucosa alone appeared intact the muscular edges having failed to unite. The tubes were much altered, the right being completely obliterated.

In the authors' opinion the condition was a primary abdominal pregnancy as it does not seem probable that the placenta would have been expelled at five months and then grafted in the iliac fossa. The lesions of the tube through which the spermatozoa penetrated into the abdominal cavity did not permit the fecundated ovum to enter the tube and from thence pass into the uterus.

W. A. BRENNAN

cur during the operation of some other cause.

It would appear, however, that the mother is primarily at fault because of some disease condition of an organic nature or merely an increased irritability of the centers governing the explosive action of the uterus.

J. E. MCCORVIE

Brodhead, G. L.: Pregnancy in the Rudimentary Horn of a Bicornate Uterus. *J. Am. M. Ass.*, 1920, LVIII, 1453.

Brodhead quotes Lec's statements that over 100 cases of pregnancy in the rudimentary horn of a bicornate uterus have been reported since 1869, and that while the gestation sac usually ruptures early, with hemorrhage and symptoms much like those of ectopic pregnancy, the ovum may grow to term.

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At autopsy a foetus weighing 4½ lbs. was found free in the abdominal cavity. The foetal sac, measuring 18 cm. in diameter was connected by a pedicle 1 cm. in diameter to the left aspect of the uterus at about the level of the internal os. The left ovary and the fimbriated end of the tube were attached to the foetal sac. Drawings and pathologic data are given.

W. H. CARY

Bourne, A. W.: A Lecture on the Toxæmias of Pregnancy. *Brit. M. J.*, 1920, 1, 727.

The author states that the toxin produced almost certainly by the growing ovum during pregnancy is absorbed by the maternal circulation. The ovum constantly poisons the mother, but in all healthy women most of the toxin is effectively countered by their own immunizing efforts. Schmoil proved that foreign foetal protoplasm is conveyed into the maternal circulation when he demonstrated the presence of small pieces of syncytial protoplasm in the circulation.

A biochemical defence is set up by the maternal tissues to battle the invasion. Abderhalden demonstrated that the maternal blood contains a specific ferment capable of digesting placental protein during pregnancy and for ten days afterward. Theis and Lockemann also showed that maternal serum is sensitized to certain bodies in the foetal serum and placenta. This has been borne out also by the laboratory work of Young who, by the injection of placental extracts, produced experimental toxæmia in animals, the symptoms and postmortem appear-

Cellulitis or carbuncle are often confused with anthrax. An early diagnosis may be obtained, however, from the bacteriological demonstration of the anthrax bacillus in the lesion. Material for examination will be found by raising the crusted edge of the lesion.

Various methods of medical treatment have been advised. Scavo reduced the mortality in a series of Italian cases from 25 to 6 per cent by means of anthrax serum. In 200 cases treated by Krause with normal beef serum the mortality was 0.5 per cent.

The author contrasts 9 surgically treated cases with 42 cases treated by expectant methods. The non-surgical treatment consisted in confining the patient to bed and immobilizing the infected area. A light diet and a maximum amount of fluid were given.

The average duration of the disease was 23 days in cases followed by recovery and 4 days in fatal cases.

Eighty-two per cent of the patients had lesions about the head and neck. Cervical infections are especially dangerous because of the resulting oedema and the proximity of vital structures. The intensity of the general symptoms such as nausea, vomiting, and restlessness gives no constant indication of the extent of the disease. In a number of cases an abrupt onset of severe general symptoms was followed by a rapid and favorable termination of the infection.

Of the 51 cases treated surgically, 44 per cent survived, while that of non-surgical treatment was 7 per cent.

The disparity of the results following surgical and non-surgical methods of treatment is very striking. Surgical interference is not only futile but harmful since it tends to increase and spread the local lesion by breaking down the natural barriers to the disease and opening up new portals of entry. Operation was followed so closely by septicæmia and death in a number of cases that it came to be regarded as a causative factor.

BLOOD

Myers, V. C.: Chemical Changes in the Blood in Disease, *J. Lab. & Clin. Med.*, 1920, v, 418.

effect on the content of these substances in the blood both normally and pathologically.

Urea is formed largely in the liver from the ammonia resulting from the deamination of amino acids which are set free in digestion but are not of immediate use to the organism. It is largely exogenous in origin. Creatinine is probably formed in muscle tissue from creatine. It is almost entirely endogenous in origin. Uric acid originates from the enzymatic transformation of amino and oxy-purines.

Under ordinary dietetic conditions it is partly exogenous and partly endogenous.

Normally the non-protein nitrogenous constituents vary in their proportionate partitions in the urine and the blood. In the urine the amounts expressed in per cent of the total non-protein nitrogenous constituents are approximately: urea nitrogen, 85 per cent; uric acid, 1.5 per cent; creatinine, 5 per cent; ammonia nitrogen, 4 per cent; and undetermined nitrogen, 4 per cent. In the blood the proportions are: urea nitrogen, 50 per cent, uric acid, 2 per cent, creatinine, 2 per cent; ammonia nitrogen, 0.3 per cent, and undetermined nitrogen, 46 per cent.

The kidney removes ammonium salts and creatinine from the blood almost completely. Uric acid is excreted with difficulty. Urea holds an intermediate position. In renal insufficiency, therefore, there is retention first of uric acid, then of urea, and lastly of creatinine.

The selective action of the kidney holds the urea nitrogen at the level of about 50 per cent of the total non-protein nitrogen in the blood. When the renal function is impaired, as in chronic interstitial nephritis, bichloride poisoning, polycystic kidney, malignancy, pneumonia, intestinal obstruction, and some cases of acute nephritis, the urea retention may be very high. In cases of gastric and duodenal ulcer there is often a slight urea retention. In eclampsia, the blood urea is only very slightly elevated, if at all.

In cases of advanced nephritis the estimation of urea is of less prognostic value than the estimation of creatinine but it is a better guide to the value of the treatment. In prostatic obstruction the estimation of urea is of great prognostic importance. When the urea nitrogen is 30 mg. or over, the outlook is poor.

There are two lines of attack in treating patients with nitrogen retention: (1) increasing the kidney output; and (2) decreasing the nitrogen intake. The first method is of doubtful value, especially in chronic cases. The second method is of great value, but obviously a protein-free or very low protein diet cannot be continued for long periods.

SAMUEL KAHN

BLOOD AND LYMPH VESSELS

Roussiel, M.: Circular Suture of the Brachial Artery in Man (De la suture circulaire de l'artère humérale chez l'homme) *J. de chir.*, 1920, xvi, 18.

The author has found in the literature 7 cases of circular suture of the brachial artery. To these he adds the histories of 3 of his own. In the 10 cases the results were successful in 7 and unsuccessful in 3. The failures were due to the extent of the traumatism or infection.

The techniques of the various operations are described.

Suture is indicated when section or a thrombus is situated above the origin of the deep brachial artery,

of the uterine wound results in complete muscular regeneration, imperfect healing, in thin scars composed of fibrous tissue which sometimes are so thin that they consist of little else than peritoneum and endometrium or decidua with a small amount of intervening fibrous tissue. In the latter type of scar the outstanding feature is complete failure of muscular union. It is, of course, these thin scars which are apt to rupture in future pregnancies. Owing to the progressive distension of the pregnant uterus the scar becomes thinner and thinner and may ultimately give way under the tension of normal pregnancy or the additional stress of labor.

The author has been able to collect 92 cases from the literature and reports 5 of his own, making the total number of cases on record, 97. A study of these cases makes it evident that infection of the uterine wound was by far the most important factor in imperfect healing. If the uterine wound suppurated, necrosis often occurred and the sutures were cut out, the muscular edges of the incision being allowed to retract so that ultimately only a thin bridge of fibrous tissue covered by peritoneum and endometrium inside was left. In the cases so far reported the recovery from cesarean section was febrile or infection of the uterine or abdominal wounds was noted. Infection was present in 51 of 66 cases in which this point was mentioned. A very important accidental factor in rupture was the implantation of the placenta over the scar in subsequent pregnancies. Among 50 published cases, in which the point was noted, this occurred in 33. In Holland's opinion, the action of the placenta in favoring rupture lay in the occurrence of retroplacental hemorrhage due to the separation of the placenta from the gradually stretching scar. In only one of the 22 cases reported by him did the scar rupture.

version. A most important fact was that in the 53 reported cases in which the material used for suturing the uterine wound was mentioned, catgut was used in 41 and silk in 12.

As the result of the assistance of the obstetrical surgeons he had asked to co-operate with him in this investigation, Holland was put in possession of the subsequent reproductive history of 1,089 patients on whom cesarean section had been performed between the years 1912 and 1918 inclusive. The lists of these cases were sent to him complete in every essential detail. The total number of operations performed was 1,588 and there were 70 per cent of successful follow-ups.

Of these 1,089 patients, 610 had remained sterile and 479 had become pregnant subsequent to the operation. The results of the pregnancies were as follows: delivery by the natural passages, 79; repeated cesarean section, 326; abortion, 42; pregnant now, 91; and rupture of scar, 18. By adding the pregnancies and deducting the abortions and the number of cases of early pregnancy the true

frequency of rupture of the scar in this large series of patients was found to be 4.3 per cent.

Perhaps the most important point of all to settle is whether rupture of the scar is more apt to occur after the use of catgut than after the use of silk in the suturing of the uterine incision. The lists of operations revealed the fact that catgut is used much more frequently than silk, catgut having been employed in 66 per cent, silk in 20 per cent, and silk-worm gut in 14 per cent. In the 18 cases of rupture, catgut had been used for the original operation in 15 and silk in 2. To obtain the most exact information on this subject, however, it is necessary to find out in what proportion the two materials were used in those cases in which the subsequent pregnancy had gone to, or nearly to, full term. It was discovered that catgut had been employed in 279 such cases and silk in 91 and that 15 ruptures had occurred.

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guaranteed as in cesarean section the incision is made into a mucous cavity in close proximity to a contaminated area, i.e., the vulvovaginal tract. In Holland's opinion, therefore, the use of catgut as a suture material in cesarean section incision is doomed.

C. H. Davis.

PUERPERIUM AND ITS COMPLICATIONS

McNelle, O.: Comparison of the End-Results in Intermediate and Secondary Perineorrhaphies. *California State J. M.*, 1920, xviii, 179.

McNelle reports 100 cases in which an immediate or a secondary perineorrhaphy was done and concludes that the immediate operation is the procedure of choice.

Natural and artificial causes of lacerations of the

cervical or perineal tears.

Artificial causes of lacerations include: too early bearing down, the use of forceps and operative procedures before obstetrical conditions warrant, the administration of pituitary extract without

the result of unrepaired perineal injuries.

Immediate repair gives at best a mediocre result on account of the edema and distortion of the

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The disparity of the results following surgical and non-surgical methods of treatment is very striking. Surgical interference is not only futile but harmful since it tends to increase and spread the local lesion by breaking down the natural barriers to the disease and opening up new portals of entry. Operation was followed so closely by septicæmia and death in a number of cases that it came to be regarded as a causative factor.

BLOOD

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SAMUEL KAHN

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The techniques of the various operations are described.

Suture is indicated when section or a thrombus is situated above the origin of the deep brachial artery,

- 3 It permits early massage
- 4 The deformity is easily controlled
- 5 Union probably occurs earlier on account of the infant's ability to use the limb

C D Haven

Schwarz, H.: Infant and Child Mortality, Including Miscarriages and Stillbirths. *Am J Dis Child*, 1913, LV, 249

The author's statistics cover ten years and were compiled from the social histories of families the average social status of which was that of a New York family with an income in prewar times between ten and eighteen dollars a week. In 6,968 of such families there were 27,711 pregnancies inclusive of stillbirths and miscarriages. Of these 27,711 pregnancies 2,239 resulted in miscarriages and 413 in stillbirths. The remaining 25,059 represent the total number of children born alive. The percentage of children born alive in each family was therefore 36. The number of children born alive who died before one year was 3,232. From the first

found that in 27,711 pregnancies death occurred in 6,965 (25 per cent).

Computed in terms of one thousand, the figures show that there were 80.7 miscarriages and 904.2 living births per thousand pregnancies. The infant death rate up to one year was 128 per thousand living births. In contrast to these figures is the death rate of only 70 per thousand among children in the same group of families who were under the author's care. This saving of 58 infants per thousand living

10 pregnancies the rate was 141.2 per thousand or more than 10 per cent of all pregnancies ending in miscarriages. In 16 families with 14 pregnancies, i.e., 224 pregnancies, there were 40 miscarriages (17 per cent). The stillbirth rate per thousand total pregnancies was 14.9.

The article is illustrated with a series of statistical tables showing the infant mortality up to the eighth year in relation to nationality and literacy.

H. K. Gimson

chronic gall-bladder disease in 27; tuberculous colitis in 18; diverticula of the colon in 5; cancer of the stomach in 5; cancer of colon in 5; and several other conditions in single cases. Fifty-three cases in this group showed multiple lesions.

In 270 cases with symptoms of stomach or duodenal disease uncomplicated gastric or duodenal lesions were found in 137, multiple lesions in 21, and negative findings in 57. Of 155 cases with symptoms of gall-bladder disease 89 showed signs of gall-bladder disease with or without complications, and 27, lesions outside the gall-bladder. In 44 of these cases the examinations were negative. In the 140 cases with symptoms pointing to disease of the appendix the examinations were negative in the appendix region and various complications were limited to the colon, colonic adhesions were found in 12 and other conditions in 11. In the remaining 12 cases the findings were negative.

In the entire series of cases pathologic appendices were found in 323, this being the most common lesion. In 183 there were signs of chronic gall-bladder disease, while duodenal ulcer was demonstrated in 124 and stomach ulcer in 93. Adhesions involving the colon were found in 50 cases; cancer of the stomach in 36; tuberculous colitis in 24, syphilis of the stomach in 5; pyloric stenosis in 2; diverticula of the colon in 9; and diverticula of the duodenum in 4.

Ninety-five patients showed two distinct lesions and 9 had triple lesions. There were 46 patients with combined gall-bladder and appendix disease, 16 patients with duodenal ulcer and chronic appendicitis; 13 patients with stomach ulcer and chronic appendicitis; 8 patients with duodenal ulcer; 3 patients with bladder disease; 3 patients with bladder disease.

diverticula, appendicitis and

spondylitis, duodenal ulcer and tuberculous colitis, duodenal ulcer and stomach cancer, gall-bladder disease and tuberculous colitis. The triple lesions were as follows: 6 cases of disease of the gall-bladder and appendix with ulcer; 1 case of gall-bladder disease with both stomach and duodenal ulcer; 1 case of stomach and duodenal ulcer and chronic appendicitis; and 1 case of gall-bladder disease with stomach ulcer and tuberculous colon.

The negative findings reported in 240 of the 1,000 cases with definite symptoms in the digestive tract are ascribed to one of three factors: (1) failure on the part of

tion; (2) caused by the lesions present. In the series reported the first of these causes is the most important.

Appended to the article is a table giving the operative and roentgen findings in 146 cases. In

35 cases there was more or less disagreement between the X-ray and the operative findings, while in 111 the X-ray examinations correctly foretold the operative findings. Of the 35 cases in which there was disagreement in the findings, only a partial examination was given in the first 10 and the lesions were found at operation in organs not examined by the roentgen ray. In the next 6 cases the examinations were negative for appendix disease, but the patients were operated upon for acute appendicitis at later periods. These were therefore cases of chronic appendix disease with an acute termination or cases in which the occurrence of acute appendicitis was merely a coincidence. The next 7 cases gave X-ray evidences of ulcer, but at operation no ulcer was found by palpation. Rather than enter into an argument regarding the reliability of excluding ulcer by palpation, the author classes the X-ray diagnoses in these cases as errors. In the remaining 12 cases also the X-ray diagnosis was erroneous.

ADOLPH HARTUNG.

Huessy, P. (dem en)

The author is of the opinion that the most essential factor in the treatment of malignant tumors with radium and the X-ray is the avoidance of the irritating dose. Every cancer cell should get only the fatal dose, never an irritating dose. Observation has proved that recurrences following radiation grow extremely rapidly whereas those following operation do not. The former also metastasize rapidly and therefore cannot be attacked therapeutically. In his own cases the best results were obtained by operation followed by radium.

Even the smallest dose of X-ray treatment aggravates the condition and therefore the author entirely discards such treatment after operation. Even in operative cases it does harm and in inoperable cases it does not offer as much benefit as excochleation. Radium, however, often gives results lasting for years. In cases of cancer of the cervix the author has done an excochleation to reduce the amount of cancer tissue present before treating with radium.

The question whether operation or radiation should be employed cannot yet be answered.

SIMON (2).

Maury, J. M.: The Results of the Exposure of Animal Ovaries to the Rays of Radium. *J Am Med Ass.* 1920, lxxiv, 1711.

The experiments recorded were made for the purpose of determining the changes brought about in the ovaries of rabbits by exposing them to 50 mg of the element radium for twelve hours. This dosage was selected because it is that generally used in cases of so-called idiopathic uterine bleeding which are now regarded as due to an abnormal condition of ovarian secretion.

Fifteen female rabbits were treated, each being given a dosage of 600 milligram hours, the radium

culous side, making a total of 28 per cent of secondary infections found in association with tuberculous kidneys

"The results show conclusively that while a negative smear or culture from the bladder in a case of cystitis and pyuria points strongly to tuberculosis, a positive smear or culture from the bladder, or even from the kidney urine, does not exclude this disease"

A C STOKES

Seres, M.: Pyelotomy in Nephrolithiasis (*La piélotomía en los cálculos del riñón*) *Prog de la clin* Madrid, 1920, viii, 67

On the basis of the literature amplified by statistics and cases observed by the author in his experience as Professor of Urology in the Faculty of Medicine in Seville, pyelotomy is regarded by Seres as the operation of choice in the treatment of renal calculi. It was formerly thought that this operation is more apt to be followed by fistula than incision of the kidney substance, but the contention has not been substantiated by the facts

Among the advantages of pyelotomy over nephrotomy is the relative absence of hemorrhage. In nephrotomy, even though the amount of blood lost at operation may not be great, the bleeding obscures the operative field so that the technique is rendered more difficult. In reaching the pelvis by way of the renal substance kidney tissue is disorganized, a zone of infarction and cicatrization and a consequent loss of renal parenchyma result, usually under conditions which demand that renal tissue be preserved. In order to lessen the zone of infarction some surgeons have advocated the use of silver wire as suture material. Others, however, claim there is no advantage in such a procedure. Usually also in nephrotomy the renal calyces are damaged in the search for stones, an injury which does not occur in pyelotomy

tality of pyelotomy is lower.

The operative technique is divided into 7 stages.

1 Isolation and delivery of the kidney. The curved lumbar incision is used, the kidney freed from perinephric fat, the peritoneum carefully separated, and the kidney delivered with the fingers.

2 Isolation and exploration of the renal pelvis.

pelvis from the surrounding tissue is not advocated as a portion of the perinephric tissue is of value in making a complete closure of the pelvic incision. The calculus is located by digital palpation of the pelvis and its size and consistency are also determined in this way

3 Incision of the pelvis longitudinally on the posterior surface above the calculus. The length

of the incision depends upon the size of the calculus. The pelvis is thus opened and the mobility of the calculus determined.

4. Extraction of the calculus. This is usually effected by finger enucleation although forceps and sounds may be employed. Care should be taken to prevent fragmentation of the calculus and tearing of the incision during the extraction. A special pair of forceps of the author's own invention lessens these dangers

5. Exploration of the permeability of the ureters by means of a ureteral sound or ordinary bougie. In this exploration a hitherto unsuspected obstruction may be discovered. As a rule, however, obstruction may be determined beforehand by means of the X-ray.

6 Suture of the pelvis. Fine catgut is used, perinephric fat being included in the suture line to aid in obtaining more complete apposition and closure. Often this closure is re-enforced by a second line of sutures which include the regional perinephric tissues.

7 Drainage and closure. A rather long roll of gauze is applied to the posterior surface of the kidney and allowed to project outside of the wound. The kidney is replaced and the wound closed except for points of drainage.

As the fatty fibrous capsule of the posterior surface of the kidney is of special use in the suturing of the pelvic incision, its complete removal as practiced by some surgeons is not favored. Some surgeons do not suture at all, but Seres obtains complete closure with the establishment of the ureteral canal at once and thus often is able to abolish a source of infection. Payr's method of covering over the pyelotomy incision with a flap of renal capsule

exploration at operation is rendered unnecessary. The shadow of the calculus may be.

1. Completely outside the renal shadow and in front of the hilus, which is the most convenient area for pyelotomy.

2. Partly outside the renal shadow and partly merged with it. In this case the renal pelvis is partly inside of the renal sinus but is still in a favorable position for pyelotomy.

3. Completely within the renal shadow. In this case the pelvis may be entirely inside the renal sinus.

W R MEEKER

Legueu, F.: New Ideas with Regard to Nephrectomy (*Les orientations nouvelles du problème de la néphrectomie*) *J. d'urof. méd. et chir.*, 1920, ix, 1.

kidney.

Brown was taken sick with appendicitis and incurred and was forced to pay a debt of \$567.00 for medical services and hospital fees. Courchesne refused to reimburse him for this amount and Brown therefore brought an action against him. The lower court entered a judgment for \$567.00 in favor of Brown. Courchesne appealed.

The upper court held that an employer who deducts a portion of employees' wages for the purpose of accumulating a fund for the care of his employees during illness assumes no personal responsibility other than the proper and faithful administration of the trust fund. It held also that an employee suing to recover hospital expenses from an employer who had deducted a hospital fee from his wages had the burden of proof in alleging that the fees were collected as a present hospital fund to be used in case of sickness and that the employer had on hand sufficient funds to pay such expense. In this case no evidence was introduced by the plaintiff to prove the latter contention and the judgment of the lower court was reversed.

J. A. CASTAGNINO

Workman's Compensation Before and After Amputation. *Addison vs. W. E. Wood Co., et al (Mich)* 174 N. W. R. p. 149

In this case the plaintiff filed a claim with the Industrial Commission against the defendant company for a fractured limb which he sustained while in the company's employ. The Industrial Commission awarded him \$10.00 a week for 54 weeks which is allowed under the statutes for total disability. Later it became necessary to amputate the limb and the Industrial Commission awarded \$10.00 a week for 125 weeks, the payments to date from the time of the amputation.

The company appealed from the ruling of the Industrial Commission, contending that the payments should date from the time of the original injury rather than from the date of the amputation. The upper court held, however, that Addison was entitled to \$10.00 a week for 54 weeks for total disability and an additional \$10.00 a week for 125 weeks, the payments of this later allowance to date from the amputation.

J. A. CASTAGNINO.

Question Whether or Not Disease Was Chronic Held, on Evidence, for Jury. *Coffey vs. Northwestern Hospital Assn (Ore.)*, 183 Pac. R. p. 762

The plaintiff had a contract with the defendant, the Northwestern Hospital Association, by which she was entitled to medical and hospital services for any sickness or injury except a chronic disease. The plaintiff suffered from prolapse of the uterus, and requested the defendant hospital to treat her. The hospital contended that the condition was chronic as the plaintiff had suffered from the same ailment two years prior to entering into the contract. It therefore refused to treat her. The plaintiff sued on the contract and recovered a judgment for \$1,500. The defendant appealed the case.

In reviewing the case the upper court defined a chronic disease as a disease of long duration or a disease characterized by slowly progressive symptoms. Whether or not the condition referred to in this case was a chronic disease was a question of fact for the jury to determine and the burden of proof was upon the plaintiff to show that it was not a chronic disease. The court held further that the evidence indicated that the plaintiff had entirely recovered from the first attack and that the second attack some two years later was brought about by heavy lifting and was therefore not chronic. The judgment of the lower court was affirmed.

J. A. CASTAGNINO.

Ratification of Employment of Physician. *Baker vs. Brown & Hackney, Inc. (Ark)* 215 S. W. R. p. 578.

White, an employee of the defendant company, Brown & Hackney, was injured during his employment. An agent of the company called Dr. Baker to attend him and Dr. Baker continued to treat him for a considerable length of time. The company refused to pay Dr. Baker for services other than first aid as it contended that the agent had authority to employ a physician for first aid only. Baker sued the company for \$1,000.00. The lower court instructed the jury that the company was liable only for first aid and the jury brought in a verdict for \$24.00.

Baker appealed on the ground that the company knew that he continued to render services to White and by its silence acquiesced and ratified his employment by the agent. This contention was sustained by the upper court and the judgment of the lower court was reversed.

J. A. CASTAGNINO.

Anthrax as an Accident. *Eldridge vs. Endicott, Johnson & Co.*, 189 N. Y. App. Div. 53, 177 N. Y. Supp., p. 863

Whether or not anthrax is to be considered an accident under the terms of the Workmen's Compensation Act is the question considered in the case reported. The facts were as follows:

The widow of a former employee of Endicott, Johnson and Company filed a claim against the company with the Industrial Commission for the death of her husband who died from anthrax which was contracted from handling hides in the tannery of the defendant company. The evidence showed that the former employee had received a slight cut on the neck in a barber shop while he was being shaved and that the anthrax infection began in this cut.

The Industrial Commission held that the deceased was injured during his employment. From this finding the company appealed.

The upper court held that the death was caused by anthrax and was not due directly to the cut on the neck. It therefore affirmed the award of the Commission.

J. A. CASTAGNINO

Kreissl, F., and Gehl, W. H.: Concerning Cystic Dilatation of the Vesical End of the Ureter, with Report of a Case. *Illinois M J*, 1920, xxxvii, 315

As the number of cases of cystic dilatation of the vesical end of the ureter which have been reported is small the etiology of the condition is obscure. Stenosis of the ureteral orifice, either congenital or acquired, is considered by the authors as the most common cause. Rummell, Burkhardt, and Buström favor the theory of congenital origin because the ureter for a short distance is covered only by mucosa, or there may be a congenital weakness of the bladder muscle, and the orifice is devoid of the contractile muscle fibers of the bladder.

Clinically the results are the same. Difficult and frequent urination, terminal tenesmus, and back pressure with dilatation of the ureter and pelvis follow when the cyst has become large enough to cause disturbance.

In prolapse of the ureteral mucosa the blood vessels run to the base of the protrusion, while in a cyst they arise from the bladder mucosa. In prolapse there is a pedunculated base and a broader top which contain the ureteral orifice, while a ureterocele has a broad base with the ureteral orifice excentrically located. A prolapse may be replaced with a ureteral catheter. Following the emission of urine the ureterocele usually becomes collapsed but remains unchanged if the orifice is completely obstructed by oedema, pus, or a stone.

In a very small or early ureterocele cutting and cauterizing it through a cystoscope may be tried, but in cases of well-formed cysts of long duration operation is the method of choice. In the case cited the bladder was opened suprapubically, the orifice located, and a ureteral catheter introduced. The anterior and posterior walls were slit and the halves dissected free from the base. The ureteral mucosa was sutured to the bladder mucosa with fine catgut sutures. As infection of the pelvis was present the ureteral catheter leading out through the urethra was allowed to remain. Kidney function was improved. Because of the prolonged stenosis at the orifice, the ureter and pelvis were apparently dilated permanently. ■ C. D. PICKRELL.

BLADDER, URETHRA, AND PENIS

Santi, P.: The Treatment of Urinary Incontinence in Women.

Santi reviews the various operative procedures used for the treatment of urinary incontinence in women and describes a method of his own.

Any operative method should be based on the

or increasing urinary continence

3. The urinary canal should be lengthened as much as possible.

4. The urethra should be made to curve more than the normal urethra, and as far as possible the curvature should be made a double curvature.

Santi forms a new canal from the tissues of the anterior wall of the vulva and joins it to the primary urethra. He makes a semicircular incision on the lower half of the urethral opening so as to dissect from $\frac{3}{4}$ to 1 cm. of the urethral tube from the vaginal wall. From each end of this incision he makes two other incisions transverse and equal in length to the curved incision. From the middle of each transverse incision he makes two perpendicular

center toward the exterior, their depth being made greater toward the exterior.

The external edges are approximated and sutured so as to form a tube for the prolongation of the urethra. Over this tube the two remaining edges of the perpendicular incisions are sutured together. The former opening is narrowed at the point of juncture, and a projection is formed by which urinary retention is facilitated. The clitoris also

and when the patient is in the horizontal position the urinary jet is almost vertical.

Santi describes three clinical cases in which he performed this operation with satisfactory results. The method is simple, may be utilized in all cases, and does not necessitate any important interference with the urinary system.

W. A. BRENNAN

Frassi, L.: Gunshot Wounds of the Bladder (Osservazioni sulle ferite d'arma da fuoco della vesica) *Polichin*, Roma, 1920, xxvii, 70, 84

In his own experience in an Italian Military Hospital and an exhaustive study of the literature, Frassi found that gunshot wounds of the bladder are relatively rare.

Clinically, bladder lesions are distinguished as intra- and extraperitoneal lesions. Isolated bladder lesions are very rare and in such cases the projectile may or may not be retained. When bladder injuries are associated with lesions of the neighboring organs they are usually intra- rather than extraperitoneal.

The bladder is generally injured by the penetration of a projectile through the perineal, ischiatic, or sacral route, more rarely by the anterior route. The gravity of a bladder wound depends upon the traumatizing agent and the rapidity with which infection develops. Oseous complications are the most frequent. Among others are lesions of the intestinal loops, the extraperitoneal portion of the rectum, the urethra, limbs, vessels, and nerves.

court. From this finding the Spiegel House Furnishing Company appealed for the reason that no one had seen the employee injure himself and the Industrial Commission had based its decision on the verdict of the coroner's jury which it permitted to be offered into evidence. The supreme court held that a coroner's jury had no judicial power and their verdict had no weight in a civil suit to fix liability. It therefore reversed the order of the Industrial Commission. J. A. CASTAGNINO.

Liability of False Representations as to Disease.
Truman vs Manweiler et al. (Ind.), 125 N. E. R., p. 412.

Friends of the defendant, Manweiler, represented to the plaintiff, Truman, that Manweiler was sick with "lung fever" and induced her to take him in and care for him. The plaintiff stated that if he were sick with a contagious disease she could not do so but was assured that he was not. Later she discovered that he had diphtheria, but in view of the fact that he was too ill to be moved she continued to nurse him. In bringing suit against Manweiler et al. she alleged that they were aware of the contagious disease and willfully misrepresented the facts. The defendants contended that they acted in good faith upon a physician's statement.

The Court held that whether they knew or not was a question of fact for the jury. From the evi-

dence the jury found that they were aware of the contagious nature of the disease and were guilty of fraud in misrepresenting it. Upon appeal the upper court affirmed the findings of the lower court.

J. A. CASTAGNINO.

Rules Relative to Insanity as a Defense to Crime.
Thomson vs State (Fla.), 83 So. R., p. 291

The plaintiff was convicted for murder in the first degree. The defense was insanity at the time of the act. Judgment imposing life imprisonment was rendered against him.

Upon review the court found that the evidence raised a reasonable doubt as to the plaintiff's sanity at the time of the act. The law presumes all men sane and in the absence of evidence to the contrary the court and jury are justified in acting on this presumption. If the evidence tends to rebut the presumption of sanity, however, and if the jury entertain a reasonable doubt on the subject, it is their duty to acquit.

When insanity of a permanent type as distinguished from mental disorders resulting from disease is shown to have existed prior to the act, it may be presumed that such insanity continued up to the time of the act.

was reversed and the case sent back for a new trial.

J. A. CASTAGNINO.

the floor of the pelvis is necessary. Even after this treatment, however, the repaired vagina and perineum may suffer injury during subsequent labors.

The majority of cases of prolapse of the vagina and uterus at or after the menopause show procidentia and may be complicated by ulceration. In cases in which there is no descent of the uterus, vaginal repair alone may suffice, but when there is any degree of descent, especially in the presence of cystocele, there is no operation to compare with the interposition operation together with colporrhaphies, anterior and posterior, and perineorrhaphy. In a few exceptional cases it may be necessary to reconstruct the posterior segment of the floor of the pelvis from above.

The author's method of reconstructing the posterior segment of the pelvic floor consists essentially in obliterating the pouch of Douglas by approximating the uterosacral ligaments in the midline by transverse sutures and fixing the rectum by means of sutures to the edges of the newly-formed aperture.

Emphasis is laid upon the pre-operative and postoperative treatment of the vagina. Before operation the vagina should be packed for several days with gauze soaked in a solution of Milton's fluid, this packing being changed every twelve hours. After operation it should be irrigated with Milton's fluid by means of a perforated tube doubled upon itself and inserted at the time of operation.

F. B. SETTLE.

Baker, W. H.: A Few Observations Concerning Chronic Uterine Infections. *J. Indiana State M. Ass.*, 1920, viii, 166.

In his observations upon the treatment of chronic uterine infections the author recommends operation between ten and thirteen weeks after the acute stage when there is no fever and the white blood count is not above 9,000 whites per cubic centimeter.

His conclusions are as follows:

1. The removal of the tubes or of the tubes and uterus in extensive infection results in a disturbance of the glands of internal secretion. The symptoms produced by double salpingectomy and by salpingectomy with subtotal hysterectomy are about the same except that menstrual symptoms and leucorrhoea are less marked following the combined operation.

2. The disturbance of the glands of internal secretion in pelvic operations on women must be due to interference with the circulation to the ovaries or the fact that the tubes and uterus are part of a hormone of the sexual glands of internal secretion.

3. A subtotal hysterectomy should be done when infection of the pelvic organs is so great as to necessitate the removal of the tubes.

4. Menorrhagia and vaginal discharge follow in a number of cases operated upon for infection of the uterus or adnexa if the uterus is not removed at the time of operation.

5. Close attention should be paid to the problem of the postoperative vasomotor syndrome in these cases and its relation to surgery and infection.

H. B. MATTHEWS.

Paramore, R. H.: Notes on the Causation of Red Degeneration. *Lancet*, 1920, cxcviii, 1005

Red degeneration is the thrombotic turgescent condition which results from vascular pressure changes. The author reports the case of a nulliparous woman who experienced a sudden attack of acute abdominal pain with nausea and vomiting. The pain persisted for six days and was finally relieved at the onset of the regular menstrual period. On examination a smooth round pelvic tumor was found attached to the uterine cervix. When the uterus was removed eleven days after the beginning of the illness a single intramural fibroid the color of raw meat was revealed.

The type of degeneration in the tumor described is thought to be the result of mechanical interference with the circulation. The frequent occurrence of the change in gravid uteri points to an increase in pressure as a causal factor. The relief from symptoms with the onset of menstruation was probably due to the relaxation of the uterine musculature.

The author compares red degeneration to the effects of torsion of the pedicle of an ovarian cyst. In the latter condition also there is a sudden attack of pain with rigidity of the abdominal muscles and a pelvic tumor due to obstruction of the venous return.

A. J. SCHOLTZ, JR.

ADNEXAL AND PERI-UTERINE CONDITIONS

Barolin, F.: Hemorrhage from the Ovaries (Blutungen aus den Ovarien) *Med. Klin.*, 1920, xvi, 9

The author reports 4 cases treated by laparotomy in which the operation and the histologic examination revealed hemorrhage from the ovarian follicles and corpus luteum as the cause of peritoneal irritation. These hemorrhages are probably more frequent than has been supposed heretofore. The site of the follicles remains a locus minoris resistentiae for a long time as here the lutein layer consists of only one layer of cells whereas on the opposite side it has many layers.

Trauma, severe abdominal pressure, and menstruation must be considered as causes of ovarian hemorrhage. The bleeding may occur at any time. In many cases it begins twelve or fourteen days before the onset of menstruation and in some it is associated with the so-called "Mittelschmerz." The hemorrhage may be discovered accidentally and if the pain is diffuse, as is usually the case, the condition may be confused with appendicitis. The differentiation from extra-uterine pregnancy may also be difficult if the menstrual history is not definite. In both conditions a hæmatocele may form. In rare instances follicular hemorrhage has caused death.

F. KAYSER (Z).

SURGERY OF THE EYE AND EAR

EYE

Clapp, C. A.: The Removal of Steel from the Eye from an Industrial Standpoint. *Am J Ophth*, 1920, III, 325

The author reports a series of 29 cases in 10 (35 per cent) of which useful vision was obtained after magnet extraction of the foreign body. In 11 cases (38 per cent) the eye was lost, in 7 (24 per cent) light perception to motion was retained, and in 4 cases normal vision resulted. Of the 7 patients operated on by the posterior route 5 retained useful vision. In 16 cases the injury occurred in the right eye, and in 12 in the left. The average size of the foreign body was 4.8 by 2 by 1 mm, the largest was 20 by 5 by 4 mm, the smallest, 1 by 0.5 by 0.5 mm.

The author states that until a few years ago his experience had led him to favor the anterior method of extraction but he now prefers the posterior route. It must be borne in mind, however, that each case should be handled according to its particular requirements.

W F MONCREIFF

Skyles, E. M.: The Effect of Certain Intranasal Conditions upon the Extrinsic Muscles of the Eye. *Texas State J M*, 1920, xiv, 10

The author lays emphasis upon the importance of chronic sinusitis and narrowing or blocking of the frontal sinus ostium, which cause vacuum headaches as etiological factors in asthenopia which fails to respond satisfactorily to the correction of refractive errors and treatment of muscle imbalance. He quotes statistics showing that from 7 to 10 per

drainage of infected sinuses W F MONCREIFF.

Jackson, E.: The Capsule in Cataract Extraction. *Arch Ophth*, 1920, xlv, 275

Jackson emphasizes the importance of taking into consideration the fundamental anatomy, physiology, and pathologic possibilities of the capsule. He reviews the physics as well as the anatomy and physiology and draws the conclusion that the capsule itself is wholly passive, it does not become opaque, and it does not of itself thicken. He believes also that the epithelium lining the anterior capsule is not a source of danger to vision in senile eyes.

The secondary cataract appearing after lens extraction is composed of tissue developed from fibroblasts which attach themselves to the capsule

at the time of the irritation or inflammation immediately following the extraction. As a rule such irritation is not seen when the lens is extracted in the capsule and when the capsule is divided peripherally rather than by the usual capsulotomy. Therefore it seems probable that the irritation resulting in secondary cataract is due to lens matter in the anterior chamber which excites a reaction on the part of the iris.

T. D. ALLEN.

Weeks, J. L.: The Operative Treatment of Glaucoma. *Arch Ophth*, 1920, xlix, 316

Weeks insists on the necessity for differentiating

cicatrix essential. He prefers the use of the trephine

the congestive and the non-congestive or simple chronic types.

In cases of acute or congestive glaucoma, after an attempt for a day or so to relieve the condition by medication, Weeks does the classical iridectomy because, by the removal of a portion of the iris, the filtration angle is opened up, the iris is pulled away from the angle on the opposite side by traction, and the cut surfaces of the iris afford an exit for the aqueous humour.

Weeks does the same operation for the earlier

choosing a filtering cicatrix earlier than is necessary rather than later. He describes several methods of producing such results and reviews their statistics. He inclines toward the La Grange operation and the trephine of Elliot. He prefers the former on account of the intra-ocular hemorrhages, iritis, detachment of the choroid, return of tension from blocking of the opening, and late infection which may occur in the Elliot operation. The latter he considers only in cases of buphthalmos, certain cases of deep anterior chamber, and cases of chronic simple glaucoma with low hypertension.

In performing the La Grange operation, Weeks makes the incision 5 mm. long rather than 7 mm. in order to avoid the danger of prolapse of the ciliary body, lens, or vitreous. The after-treatment in.

consequently it eliminates the danger of the insertion of the fingers into the rectum and accidental opening of the bowel from above. If drainage is not necessary the forceps may be removed and no harm is done by the preliminary preparation

EUGENE CARY.

Judd, E. S.: *The Operative Treatment of Vesicovaginal Fistulae. Surg., Gynec. & Obst.*, 1920, **xxx**, 447.

In former years vesicovaginal fistulae were found for the most part after difficult parturition. At present they are frequently the result of procedures for the radical removal of carcinoma of the cervix uteri by operation, cautery, or radium. Sixty-one per cent of cases of vesicovaginal fistula operated on at the Mayo Clinic since 1908 were due to some operative procedure for the removal of tumors of the uterus, and only 39 per cent followed childbirth. In 5 cases the condition followed the use of radium alone.

Radium is of undoubted value in inoperable carcinoma of the cervix but should not be used if the malignancy is not eradicated.

The scar due to cauterization and treatment with radium renders the technique of the operation for fistula much more difficult than in cases in which the fistula followed childbirth.

The first essential in the treatment consists in destroying the communication between the vagina and the bladder. This is accomplished best by dissecting the bladder completely away from the vagina as is done in the operation for the relief of cystocele. If the mucous membrane of the fistulous tract is not freed so that it can be turned into the bladder on the one side and into the vagina on the other, the communication will almost certainly reform. Undoubtedly in a certain percentage of these cases more than one operation is necessary and repeated attempts to close the fistula are advisable if the sphincter muscle of the bladder has not been destroyed. If the sphincter muscle is injured it should be repaired. If it is impossible to secure function of the sphincter a communication between the vagina and rectum just above the anal

operation was performed with comparative success.

Seventy-eight cases of vesicovaginal fistula have been operated on in the Clinic since 1908. In 54 of these it was possible to close the fistula in one operation; in 16, two operations were performed; and in 1, six operations failed completely to close the fistula. The size of the fistulous opening in these cases varied from that of a small pin point to complete eversion and prolapse of the bladder.

In 3 of the cases there was more than one opening. A large incision in the vaginal wall included all the openings and converted the operation into a single closure after the openings into the bladder had been closed separately.

The bladder sphincter was involved in 10 cases, but was destroyed in only 3. In 7 cases it was repaired quite satisfactorily.

One of the ureters was involved with the vesical fistula in 6 cases. The position of the ureter should always be determined and in some cases in which it is involved in the fistula the suprapubic operation is the operation of choice.

Legueu has recently advocated the transperitoneal vesical route for vesicovaginal fistula. This procedure has some advantages in cases in which the fistulous tract becomes attached to the pubic bone and is thus held in a most inaccessible position for use of the vaginal route.

If the fistulous opening is small, the fistula may be inverted into the bladder and held there by tension on the purse string suture which is pulled out through the urethra. This procedure is described by C. H. Mayo. A number of small vesicovaginal fistulae have been closed by the high frequency current.

Before operation the tissues should be made as near normal as possible. A cystoscopic examination should be made to determine the position of the ureters, the presence or absence of a sphincter muscle, and whether or not the bladder has been completely severed from the urethra. When the injury is near the neck of the bladder the vaginal operation is the procedure of choice. When the opening is high in the vaginal fornix and there is much scar tissue the suprapubic operation may be of service but more room may be secured for the vaginal exposure by incising the perineum. A long incision should be made in the vaginal wall down to the bladder, beginning below the sphincter muscle and extending to and through the fistulous opening. The bladder should then be separated from the vagina, the separation being begun near the cervix and brought forward toward the urethra. If the cervix has been removed and the fistula is high in the vagina the peritoneum may be opened as advocated by Kelly.

A small curved hæmostat passed through the urethra and into the vagina through the fistula helps to bring the fistulous tract downward into the dissection. When the bladder has been loosened and its edges can be easily approximated the opening should be closed with catgut and the edges of the mucous membrane inverted. The vaginal incision may then be closed with chromic catgut and all dead space obliterated. If the sphincter has been repaired it is best to use fine silk sutures in addition to the catgut, care being taken not to penetrate the mucous membrane with the silk. A retention catheter should be left in the bladder for from eight to ten days and the patient kept quiet for from twelve days to two weeks.

There were no deaths in the series of cases reviewed. Of 56 patients heard from, 4 have not been benefited by the operation, the condition of 6 is considerably improved, and the rest have been completely cured.

The original source of infection may be in the respiratory tract, the parotid gland, the genital organs, the long bones, or elsewhere.

In all cases a blood infection (septicæmia) is probably the connecting link between the primary disease and the onset of meningitis.

Meningitic neurolabyrinthitis is usually, but by no means always, bilateral. The onset is generally sudden. Irritative symptoms such as tinnitus and giddiness are often present, but may not be observed because of the patient's mental condition (coma). In epidemic cerebrospinal meningitis and parotitis deafness usually occurs early in the course of the disease.

Deafness due to meningitic neurolabyrinthitis may be associated with other metastatic lesions, e.g., orchitis, arthritis, mastitis, blindness, or paralysis of the oculomotor nerves.

The infection usually passes along the subarachnoid space from the base into the internal auditory meatus and then along the nerves and vessels to the labyrinth. In some cases the perilymphatic aqueduct is the route of invasion, while in others both paths may be involved.

As a rule both the cochlear and vestibular apparatus are affected. In many cases the cochlear apparatus is involved mainly or alone. A more or less isolated affection of the vestibular apparatus is very rare.

The pathologic changes producing the deafness may be: (1) hydrocephalus, (2) changes in the walls of the fourth ventricle, (3) purulent infiltration of the eighth nerve with subsequent descending neuritis associated with atrophy of the spiral

out vestibular symptoms, lumbar puncture should be done and the cerebrospinal fluid examined chemically and microscopically. The Wassermann reaction of the fluid should also be tested and cultures made.

Repeated lumbar punctures are of value in the treatment, especially in cases of deafness due to hydrocephalus. Small doses of potassium iodide and hypodermic injections of pilocarpin have been used in cases of meningitic neurolabyrinthitis, but apparently without success.

O. M. RORR.

Portmann, G.: Mastoiditis and Suboccipital Pott's Disease (*Mastoidite et mal de Pott sous-occipital*). *Rev. de chir.*, Par., 1919, 11, 915.

puration of the mastoid requires surgical treatment.

The findings in Pott's disease and mastoiditis in each of their three stages are summarized as follows:

SUBOCCIPITAL POTT'S DISEASE	MASTOIDITIS
<i>When There Is No Cervical Abscess</i>	
Spontaneous and provoked nuchal pains which are exaggerated by movement of the head.	Spontaneous pains in the mastoid region and pain provoked by pressure about the antrum and apex.
No morphological change in the mastoid region.	Morphological change in the mastoid region.
Early and marked stiffness of the neck.	No stiffness or only slight stiffness of the neck.
No auricular symptoms.	Auricular symptoms.
Poor general condition and often coexisting bacillary lesions in other organs.	
<i>When There Is Cervical Abscess</i>	
Slight spontaneous or provoked pain in the region of the abscess.	Very marked spontaneous or provoked pain in the abscess region radiating throughout the head on that side.
Very regular, not phlegmastic abscess without peripheral oedema.	Poorly outlined abscess with peripheral infiltration and inflammatory reaction. Exudation of pus on pressure.
Serous grumous pus from which a cytological and bacteriological diagnosis can be made.	Phlegmonous thick pus which the laboratory examination demonstrated is non-tuberculous.
<i>When There Is Fistulization</i>	
Fistula with irregular violet edges and sometimes fungoid and thin pus.	Fistula with regular red edges and a phlegmonous pus exudate.
Radiographically demonstrated lesions of the upper cervical vertebrae.	No lesions of the cervical vertebrae.
A sound introduced into the fistula tends to enter in the direction of the cervical vertebrae.	A sound introduced into the fistula tends to enter in the direction of the mastoid.
Several clinical cases are described in which suboccipital Pott's disease was diagnosed and treated as mastoiditis.	
W. A. BRENNAN	

its rate was rapid. The abdomen was somewhat distended and rather resistant and tender, especially above the pubic arch. The vulva were extremely swollen, red, and tender. The labia were pendulous and oedematous. The vaginal orifice was covered with a yellowish green exudate. A profuse seropurulent discharge, foul and offensive, was pouring from the vaginal opening. Digital examination was attempted but was impossible on account of the intense pain. The temperature was normal. The pulse rate ranged from 100 to 130. The respiration was practically undisturbed. The urine contained a large amount of albumin, a great variety of casts, and a large number of red and white blood cells. The general systemic symptoms became worse and death resulted from complete suppression of urine seven days after the patient was admitted to the hospital.

CASE 3. The patient was a woman of 28 who had always been in good health and had never had any serious disease. Menstruation began when she was 13 and was regular. The menstrual periods lasted for three or four days. The flow was associated with pain on the first day but there were no clots. The last period occurred October 13, approximately three months before the patient's admission to the hospital. She had been married at the age of 22 and had had three pregnancies. The first terminated in spontaneous abortion at the end of five weeks. The second continued to full term and was terminated normally. The third conception occurred October 13, 1910, and the pregnancy was terminated by induced abortion Jan. 8, 1920.

The present illness began Jan. 8, following a uterine irrigation with a solution to which the patient had added two "tablets" (mercuric chloride). The douche nozzle was carried deliberately into the cervical canal and the irrigation solution was allowed to flush the interior of the uterine cavity. Immediately thereafter sharp abdominal pain developed.

placenta and membranes came away one hour later. Subsequently vomiting and diarrhoea developed and the patient suffered a rather violent chill. There was a profuse bloody discharge and general pain in the joints. Urinary excretion became extremely slight, the skin extremely dry and the mouth cracked and parched. The patient's family physician treated her for suppression of urine and uræmia by placing her in hot packs. He was not informed by the patient or her husband of the true state of affairs.

The patient was admitted to the hospital with complete urinary suppression which had persisted

for twenty-four hours. No urine was passed for four days subsequent to her entrance into the hospital. Uncontrollable diarrhoea and vomiting were more or less constant. The patient complained of restlessness, a violent headache, and burning in the region of the vagina and bladder. The mouth was swollen, the teeth were tender, and the breath was extremely offensive. The eyes were normal. The lips were dry and cracked, and the tongue was dry, coated, and furred. The throat was injected. The lungs were normal. The heart action was regular and no adventitious sounds were heard. The abdomen was somewhat distended and tender over the kidneys and low down in the mid-line. The mucous membrane of the vagina was normal. There was a seropurulent discharge from the uterus. The cervix was patulous and allowed the introduction of the finger. A slough of endometrium was removed during the examination. Death occurred two weeks after the patient's admission to the hospital.

The last specimen of blood was taken the morning the patient died. The differences in the non-protein nitrogen, urea nitrogen, and creatinine content of this specimen as compared with normal blood are shown in Table 2.

TABLE I. BLOOD ANALYSES

	Mg per 100 ccm	Whole Blood	
	Jan 14	Jan 18	Jan 23
Non-protein nitrogen	20.4	330.4	370.3
Urea nitrogen	97.3	102.6	152.5
Creatinine	10.6	11.1	11.6

TABLE II DIFFERENCE BETWEEN PATIENT'S BLOOD AND NORMAL BLOOD

	Normal Mg.	Patient's Blood Mg.	Diff Mg.
Non-protein nitrogen	25-35	370.3	335.3
Urea nitrogen	12-23	152.5	129.5
Creatinine	1-2	11.6	9.6

A complete blood count on January 10 revealed 3,130,000 red cells and 15,800 white cells. The hæmoglobin was 60 per cent and the color index 0.91. The red cells appeared to be normal. The differential count was as follows: polymorphonuclear neutrophils, 98 per cent; polymorphonuclear eosinophiles, 2 per cent; polymorphonuclear basophiles, 0; small mononuclears, 9 per cent; and transitionals, 0.

On January 18 the differential count was polymorphonuclear neutrophils, 94 per cent; polymorphonuclear eosinophiles, 2 per cent; polymorphonuclear basophiles, 0; small mononuclears, 2 per cent; large mononuclears, 1 per cent; and transitionals, 1 per cent.

W. F. HEWITT.

The fourth incision is made through the lower lateral cartilage at the point where the cartilage bends upon itself. It divides the lower lateral cartilage into an external and internal half.

The last two incisions described are necessary to obtain the exposure essential for plastic work on the septum and cartilage.

The author briefly outlines the methods used in the correction of various deformities. While each case presents its own problems, any deformity may be corrected through the incisions described.

O. M. ROTT.

Watte, L. E.: The Diagnosis and Prognosis of Loss of Vision from Accessory Sinus Disease. *J. Am. M. Ass.*, 1920, lxxiv, 1510.

There are various types of accessory sinus blindness. Some of them become cured spontaneously, while others result in permanent loss of vision unless given prompt and proper attention. Etiologically they are generally divided as follows: (1) those due to the direct spread of the infection to the sheath of the optic nerve; (2) those due to the toxemia from infection in the sinuses; and (3) those due to hyperplasia.

Usually the first two types may be diagnosed

ness have been eliminated, it is advisable to operate on the sinuses.

Two factors enter largely into the prognosis; (1) the length of time before the patient seeks relief, and (2) the degree of the blindness.

Unless the condition shows improvement under treatment before the end of a week there is danger of permanent loss of vision unless the pressure on the nerve is relieved. In cases of more than two months' duration little can be expected.

When the loss of vision is total the demand for operation is more imperative than when it is only partial.

O. M. ROTT.

New, G. B.: The Treatment of Malignant Tumors of the Antrum. *J. Am. M. Ass.*, 1920, lxxiv, 1206.

The author treats malignant tumors of the antrum by cauterization followed by radium instead of by the older method of resecting the upper jaw. During the past two and one-half years, 33 malignant tumors of the antrum have been examined at the Mayo Clinic. Since 18 of the 33 patients were treated, it can not be called a selected group of cases (see table).

The group of tumors operated on included 8 squamous-cell epitheliomata, 6 sarcomata, 1 malignant tumor (type of cell not determined), 1 epithelioma (mixed-tumor type), 1 basal-cell epithelioma, and 1 fibromyxoma (malignant).

In the selection of cases to be treated the type of malignancy as well as the extent of the tumor must be considered. The patient's age and the length of

O. M. ROTT.

Tietz, C. F.: New Instrument Designed for the

Intranasal procedures for the correction of nasal deformities are divided into two stages: (1) the exposure, and (2) the actual correction or reconstruction.

The author's method of obtaining exposure is practically the same in all cases. As a rule four

cient.

The first incision is made along the border of the pyriform opening of the nose. Beginning at the lower end of the nasal bone, it is carried downward and outward, through the mucous membrane and chondro-osseous juncture. An elevator is then passed through this incision, innervated between the periosteum overlying the nasal and maxillary bones, and swept laterally and mesially, lifting from the bone the periosteum, subcutaneous tissue, and skin. The entire area extending from the root of the nose laterally over the nasal bones and superior maxilla is liberated in this way.

The second incision is made parallel to the bridge

cartilage up to the perichondrium overlying the

well out over the cheeks, in the artificial space

lying tissues remained in contact with the bone.

The third incision is made through the mucous membrane and cartilage from one nostril to the other. Beginning at the end of the second incision (the tip of the nose), it is carried backward along the lower border of the quadrilateral cartilage to the nasal crest of the superior maxillary bone.

The procedure was carried out three times with success. Intra-abdominal blood was observed in all of these cases, and in 1 the ovarian artery beneath the fallopian tube was bleeding. In the remaining cases, the plug was used in 8. No deaths occurred from loss of blood. One woman died from sepsis ten days after delivery. Tweedy's hospital experience therefore comprised 72 cases in over 18,000 deliveries, with 2 deaths. The plug was used in 30 cases. Sir Wilham Smyly, working in the same institution, had 5 deaths among 3,600 patients treated before he adopted the plug. These figures are convincing and can be explained only by the assumption that the plug exercises a pronounced influence on hæmorrhage. Tweedy maintains, however, that compression is effected with the plug which he applied as he has demonstrated this during the performance of several cesarean sections. These operations afforded his assistants an opportunity to observe directly the stoppage of pulsation in the uterine artery while pressure was made from below. Tweedy describes his method of plugging as follows:

To plug efficiently the left hand should be passed into the vagina with the palmar surface directed toward the hollow of the sacrum while the tips of the fingers lie behind the cervix. Small pieces of cotton wool squeezed out of lysol solution and each the size of the thumb-knuckle should then be inserted round the cervix with the right hand. The fingers of the left hand must be kept busy squeezing the pellets into a compact mass and forcing the spaces between them to permit the insertion of another plug. This process should be continued in a systematic manner from above downward until the vulva is reached and the vagina can hold no more. A T-bandage should be applied to keep the plug in position, and an abdominal binder fastened tightly from above downward to press the side walls of the uterus against the vagina dam. A plug so applied will cause immediate cessation of hæmorrhage, and when it is removed after the lapse of hours the blood found will be only such as can be accounted for by the flow that took place during the operation.

The vaginal plug is not easy to apply nor is its application harmless. If at the first attempt sufficient material cannot be inserted to stop the bleeding, the plug must be removed entirely and reinserted, a procedure made easier by the dilatation of the vagina. Pain, distress, and some shock always follow the application of the plug, and superficial tearing of the mucous membrane of the vagina is almost certain. The possibility of rupture of the uterus must not be discounted. To what extent intraperitoneal hæmorrhage can be controlled by a vaginal plug is still a matter of doubt. In the vicinity of the internal os control is complete. On the other hand the plug will fail utterly to stop a leakage from the ovarian artery. The latter supplies a relatively small amount of blood to the placenta, chiefly to its upper portion where

detachment is rare. When the main supply is cut off the loss of blood pressure promotes coagulation in the sinuses.

Tweedy maintains that hysterectomy has no place in the treatment of accidental hæmorrhage. Rupture of the membranes does not contra-indicate the use of the vaginal plug. C. H. DAVIS

Dougal, D., and Bride, J. W.: Etiological Factors in Abortion: A Study of 100 Cases. *Brit M J*, 1920, 1, 632.

This study is based on 100 unselected cases of abortion at the Maternity Department of St. Mary's Hospital, Manchester. Both clinical and pathological examinations were made except in cases of incomplete abortion when the whole ovum was not obtainable.

In the majority of cases the period of gestation at which abortion occurred was during the first half of pregnancy; in 40 per cent, between the third and fourth months.

Seventeen per cent of the patients had had no previous pregnancy. Eighty per cent had had full-term children and 37 per cent more than three pregnancies. Forty per cent gave a history of previous abortions, but more than half of these had had only one.

The cause of the abortion as given by 28 patients was as follows: strain in 7 cases, falls in 6, lead pills in 8, shock in 2, a kick in the abdomen in 1, injury to the foot in 1, instruments in 1, syringing in 1, and sexual excess in 1. Excluding these cases, various abnormal conditions were found either at clinical examination or at the time the uterine contents were evacuated. Of 22 patients in this group 5 had retroversion or flexion of the uterus, 2, fibroids; 3, previous abdominal operations, 3, influenza, and 2, placenta prævia. Seven patients had one of the following conditions: mitral stenosis, chronic bronchitis, pulmonary tuberculosis, severe anaemia, fibroids and placenta prævia, hydatid mole, and foreign body in the vagina. Positive Wassermann reactions were found in 12 cases. In 6 of these no other cause for the abortion could be determined. Thus a possible cause of the abortion was ascertained in 56 per cent of the cases.

The gross pathological findings in 54 cases were as follows: hæmorrhage into the decidua (including 2 cases of fibroid polyp, 1 placenta prævia, and 8 blood moles), 33, hæmorrhage into the placenta (including extensive placental infarction with associated arterial degeneration), 6; obstruction of foetal circulation, 2; hæmorrhage on the foetal surface of the placenta under the amnion, 2; hydatid mole, 1; and oedematous placenta, 1. In the remaining cases the conditions were either too limited in extent to be of decisive importance or the specimens were so incomplete that satisfactory findings could not be obtained.

In an analysis of the 12 cases which gave a positive Wassermann reaction it was found that 11 of the patients previously had had full-term children.

ances of which were almost indistinguishable from those of eclampsia.

Early eye changes are usually significant of chronic nephritis rather than the toxæmia of pregnancy. The differentiation is important for the prognosis and treatment. Retinitis is one of the more serious symptoms of albuminuria, and if this condition indicates a pre-existing disease of the kidney rather than an albuminuria due to pregnancy, the safest course is to end the pregnancy as soon as possible. Permanent damage to the kidney and lasting changes in the retina may thus be prevented.

The blood pressure is some measure of the degree of the toxæmia and an indication of the likelihood of convulsions. If the blood pressure falls to a low level while the patient is under treatment and the other symptoms clear up, an expectant attitude may be continued. If it remains high, eclampsia may be expected. An increase in the amount of albumin during treatment as determined by Esbach's tube shows that the condition is not under control. If the albumin disappears rapidly and completely the symptoms were due to the toxæmia of pregnancy and the prognosis for the immediate future is good. If the amount of albumin continues to increase, the kidney has been damaged, and the prognosis for future pregnancies is not good.

In cases of eclampsia a few slight convulsions with coma are usually followed by recovery, but the prognosis becomes worse if the convulsions increase in number and severity or if coma develops. The earlier in pregnancy the convulsions occur the more severe is the disease. Antepartum convulsions are more dangerous than intrapartum or postpartum convulsions. The heart action should be watched during toxæmia as it may have a deleterious action upon the heart muscle. Venesection and the administration of massive saline injections and veratrine should be based on the condition of the heart. In the cases of multiparæ labor should usually be induced by means of a bag, but if it is already established, it should be interfered with only if it is delayed. Delayed labor, however, is not common in eclampsia. A primigravida at term who develops convulsions without dilatation of the cervix and does not pass urine will probably improve if the child is removed by abdominal cesarean section.

Veratrine is of value to reduce the blood pressure and pulse rate. An initial dose of 1 ccm. should be given when the tension is 170 or more and there is a correspondingly rapid pulse. This dose often causes a rapid fall in the blood pressure with cessation of the convulsions. Estimations of blood pressure every hour will aid in determining the time for the next injection, which usually should be 0.5 ccm. or even 0.25 ccm. according to the level of the tension.

The colon should be irrigated until the washings are clear. Free sweating may be induced by hot packs, electric lamps, or hot bottles. Saline injections containing glucose and sodium bicarbonate up

to a maximum of 2 pt. may be given within the first four hours. Rectal injections may be continued if there is free sweating and an increasing output of urine. After twelve hours or more of this treatment the patient is usually in much better condition and ready for the induction of labor or any obstetrical operation. There should never be any violent interference such as accouchement forcé by the vaginal route. Forceps, version, bags, and the bringing down of a leg, or cesarean section may be employed.

W. E. COSTLOW

Bell, W. B.: The Treatment of Eclampsia by Transfusion of Blood. *Brit. M. J.*, 1920, 1, 625.

In the hope that his success may stimulate others to give the method a trial the author describes a case of eclampsia which he treated by transfusion of blood.

After reviewing the facts demonstrated experimentally by Dold and Obata, Bell concluded that normal blood contains some substance which neutralizes the toxin of placenta and is present alike in the blood of males and females. On this assumption he gave the patient a transfusion of about 500 ccm. of blood by the citrate method. The donor was the patient's husband.

The patient was a primigravida, 24 years of age, in the ninth month of gestation. She had been delivered with forceps at 11:30 p. m. after having had several convulsions. At 10:30 a. m., when the transfusion was given, she was almost completely comatose. There had been several convulsions after delivery and her condition was critical.

The recovery in this case was remarkable. Before evening the patient was quite rational and able to converse. The urine, which had contained acetone and albumin, soon became normal, the ammonia coefficient dropped from 22 to 4.8.

In some cases it may be necessary to repeat the transfusion. The author suggests bubbling oxygen through the citrated blood instead of shaking it. The use of a human antitoxic serum might simplify the treatment.

J. W. ROSS

Holland, E. L.: On the Rupture of the Cesarean Section Scar in a Subsequent Pregnancy or Labor. *Med. Press*, 1920, n. s. CIV, 304.

No accident is more disturbing to the peace of mind of the obstetrical surgeon than the rupture of the scar of a cesarean section. It therefore seems imperative to get at the true facts not only regarding the cause of such rupture, but also regarding its frequency. If the risk is proved to be negligible, obstetrical surgeons may continue to perform the operation according to its modern indications with a clear conscience, but if the risk is appreciable, safety must be sought either by restricting the indications for the operation or by devising a new and safer technique.

Holland gives a few important points regarding the anatomy of the ruptured scar and the chief factors responsible for its causation. Perfect healing

tissues. The intermediate operation, which should be performed from the second to the eighth day postpartum, is to be preferred in all cases in which the muscles or fascia are involved.

The only preliminary necessary for the intermediate repair is a low 1-qt enema given three hours before the operation. No laxative should have been given during the previous twenty-four hours. The local preparation consists of the application of 2 per cent tincture of iodine to the perineum, vagina, and cervix after the patient has been anesthetized.

A weighted, self-retaining speculum is inserted and the cervix grasped with two ring-type sponge holders and brought down into the field for inspection. Recent lacerations are brought together with interrupted sutures of No. 2 chromic catgut. Old lacerations are brought together in the same manner but are first denuded and trimmed. The cervix is replaced, being pushed well upward and backward to counteract the tendency toward retroposition of the uterus, and a flat dressing is inserted into the vagina to prevent soiling of the perineum by the lochia.

An Allis snap is placed on each side at the juncture of the skin and mucosa at the level desired, usually just below the lower level of the labia minora. The tissue between these two snaps is drawn taut and a narrow strip of tissue including both skin and mucosa is cut off. In recent lacerations this step is not necessary as there is already an open tear. A closed Mayo scissors is introduced into this line of cleavage about $\frac{1}{2}$ in. from the median line, pushed back, down and out for about $1\frac{1}{2}$ in., and opened so that the blades are separated about 2 in. This step is repeated on the opposite side. The mucosa directly in the median line is dissected backward for about $\frac{1}{2}$ in. In recent tears this dissection is not necessary. In cases presenting a large rectocele, however, a more extensive denudation and resection may be required. Allis snaps are introduced into the two lateral openings and a thick bundle of the levator ani muscle is grasped, drawn into the field, and sutured in the median line with No. 2 chromic catgut. Usually two or three sutures are sufficient. This forms the basis of the new pelvic floor. The mid-point of the cut edge of the vaginal mucosa is grasped with an Allis snap and the vaginal mucosa and underlying tissue are approximated with three or four sutures of No. 1 plain catgut.

No. 2 chromic catgut on a medium-sized cutting needle is used for skin suturing. These needles are used so that they catch the fascia out through the reverse orifice.

After the operation the stitches are washed once a day with a non-alcoholic solution of green soap, preferably after the morning bowel movement. After urination the stitches are dried with gauze sponges. No external douching is allowed. Heroin, gr. $\frac{1}{24}$ to $\frac{1}{12}$, is given every four hours for twenty-four hours, beginning when the patient returns from

the operating room. During this period the baby is not permitted to take the breast.

The following averages have been computed on a series of repairs half of which were of the secondary type of operation and half of the intermediate type.

RESULTS IN 100 PERINEORRHAPHIES

	Intermediate	Secondary
Average age	27	30
Primiparae	31	12
Multiparae	19	38
Day after delivery	3	
Time of operation (min)	18	24
Cervix only	1	0
Cervix and perineum	37	33
Cervix, perineum and posterior colporrhaphy	12	3
Perineum only	0	8
Delivery		
Normal	42	43
Forceps	5	7
G Version	2	0
Breech	2	0
Complications		
Episiotomy	2	
Pneumonia	1	0
Nephritis	2	0
Mastitis	0	1
Bartholinitis	0	1
Cystitis	0	6
Results		
Excellent	32	23
Good	14	10
Fair	2	8
Uterus		
Normal position	38	42
Retrovaginal	10	4
Not examined	2	4
Anesthetic		
Gas	2	0
Ether	30	27
Gas-ether	18	3
Ether-scopolamine	0	20

EUGENE CARY

NEW-BORN

Boorstein, S. W.: The Treatment of Birth Fractures at the Fordham Hospital. *Am J Dis Child*, 1920, xiv, 375.

The author reviews the literature on the subject of the treatment of fractures in children and reports 6 cases from the Fordham Hospital. The method used in the treatment of the 6 cases was that which was introduced during the war for fractures of the femur and hand in the adult. The conclusions drawn are:

1. The Thomas-Jones splint can be used with safety in cases of birth fractures affecting the femur or the humerus.

2. It allows easier transportation, permits cleansing, and obviates the necessity for constant watching.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Judd, E. S.: *Surgery of the Kidney. Minnesota Med.*, 1920, ii, 221.

Congenital anomalies affecting the kidneys are often very important from a surgical standpoint. The fused condition of horseshoe kidneys adds greatly to the difficulty of the removal of diseased portions. The congenital absence or the imperfect development of one kidney should always be determined before operation. In some cases it may be necessary to explore both sides before deciding on a nephrectomy. The organ may be displaced, either as an ectopic kidney in which the blood supply arises from the iliac vessels, or as a floating or movable kidney with normal renal vessels. A pelvic kidney may be normal, but is subject to the pathologic conditions that arise in a normally situated kidney.

*As a pelvic kidney may simulate a number of lower abdominal conditions, a pyelogram should be made in all uncertain cases. In a series of 19 cases of pelvic kidney the kidneys in 10 were apparently functioning normally, in the other 9 they were diseased. The floating kidney is not in itself a definite surgical entity. It is only part of a general visceroprotic condition which will not be benefited by surgical intervention.

Contusion or rupture of the kidney may occur without any external evidence of trauma over the kidney area. The first symptom in most cases is hematuria. If this is severe and continuous, exploration is advisable. The rupture or tear may have involved the pelvis or ureter and early intervention may save the kidney from almost certain infection and destruction. Nephrectomy is often necessary in cases of severe injury.

Complete occlusions of the ureter cause atrophy of the kidney. Hydronephrosis did not develop in any case in which it was necessary to ligate the ureter. Neither was nephrectomy necessary. Hydronephrosis is caused by partial occlusion of the ureter due to stricture or the pressure of an anomalous vessel. If a large hydronephrosis is associated with a normal kidney on the opposite side, nephrectomy is advisable.

Surgical intervention is generally indicated in cases of pyogenic infection. Usually this condition is secondary to an infection of other organs. The organisms travel through the blood stream. Multiple abscesses in the cortex necessitate a nephrectomy.

Pyelonephritis and pyonephrosis are bilateral in most cases and are often complicated by prostatic enlargement and bladder stones. In cases of unilateral pyonephrosis nephrectomy is indicated.

Stone formations in the kidney are often found in combination with bilateral pyonephrosis. In these cases it is advisable to remove the stones from one kidney at a time, the second operation to be performed as soon as there has been complete convalescence following the first operation.

Calcareous deposits in the kidney may be multiple even though there is only a single radiographic shadow. The author makes an incision in the pelvis of the kidney sufficiently large to admit the examining finger during a pelvicolitotomy. The suturing of this opening with fine catgut results in an earlier and more complete convalescence.

Tuberculosis of the kidney should be recognized in the early stages. When only one kidney is involved nephrectomy offers a favorable opportunity to remove the infection. The perirenal fat should be extensively removed and the cut end of the ureter isolated in such a manner that it will not infect the wound.

Benign tumors of the kidney are rare. Since hypernephroma develops slowly, good results may be obtained if a nephrectomy is done before the

Of 239 patients on whom nephrectomy was done in 1918, 7 (2.9 per cent) died. Three had tuberculosis of the kidney, 1 died of tuberculous bronchopneumonia, 1 of miliary tuberculosis, and 1 of chronic nephritis and bilateral pleuritis. Two of the patients had pyonephrosis; 1 died of hemorrhage and 1 of thrombophlebitis. One patient with hypernephroma died of infection, and 1 with carcinoma of the kidney died of acute nephritis and metastasis in the lungs.

A. J. SCHOLL, JR.

Barney, J. D., and Welles, E. S.: *The Bacteriology of the Urine in Renal Tuberculosis. J. Am. M. Ass.*, 1920, lxxiv, 1499.

The authors review the bacteriology of the urine in renal tuberculosis and discuss the secondary infections in this disease. They have studied 63 cases in which the tubercle bacillus was found. They have a record of 30 cultures from the bladder with 15 positive results showing secondary infection. They have made 31 cultures from the right kidney with 7 positive results, and 28 cultures from the left kidney with 6 positive results. Smears of the urine from the bladder showed secondary infection in 21 cases. Smears from the urine from the kidney were made in practically all cases and were positive for secondary micro-organisms in only 5 instances.

Combining these results it is found that in 63 cases secondary infection was discovered 11 times on the non-tuberculous side and 7 times on the tuber-

Chemical examination of the urine drawn from the two kidneys demonstrates which is the diseased side, but is of less value in determining the functional efficiency of the normal kidney. Since the correction and control of the results of catheterization by Ambard's constant Legueu has been surprised by the contradictory findings. Catheterizations which indicated good functional capacity have been disproved at operation and vice versa.

In one case catheterization showed a concentration of 25 gm. of urea to the liter associated with a polyuria of 175 gm. In view of the favorable findings the patient was operated on by another surgeon but died from renal insufficiency. This result, however, was expected by Legueu as the nitrogen content and Ambard's constant, tested before operation, showed irrefutably that the results of ureteral catheterization were of only relative value.

To determine the function of the kidney by an analysis of the urine a comparison of the results with Ambard's constant is necessary.

Legueu describes types of cases in which nephrectomy is indicated on the basis of Ambard's constant alone. For a number of years he has performed nephrectomy on the basis of the constant alone much more frequently than before, not only when catheterization was impossible but in many instances when, though possible, it appeared to be unnecessary.

Of 1,008 nephrectomies done up to the end of December 1919, the results of 13 are not yet known. Five hundred and fifty-eight done prior to December, 1915, are mentioned but not discussed. Of the remaining 437, 250 were based on the indications given by catheterization and 187 on those given by the constant alone. In the former the mortality was 3.2 per cent, and in the latter, 4.2 per cent.

When the constant is a figure less than 0.100 the disease is unilateral and nephrectomy can be done safely when it is known which side is diseased.

When the figure of the constant is above 0.120 the outlook is more serious. The higher the constant, the greater the danger, especially when it is above 0.140.

In cases of serious bilateral infection catheterization may be of value in determining which kidney is least involved. When a constant of 140, for instance, is associated with a decided inequality in the concentration of the urine from the two kidneys the latter is the factor indicating oophrectomy.

W. A. BRENNAN.

Chute, A. L.: Secondary Nephrectomy. *N York M J.*, 1920, cxi, 931.

The author defines secondary nephrectomy as the removal of a kidney at a varying period of time following a previous kidney operation which did not completely relieve the patient of his trouble. He divides cases of this kind into two classes, the first class being an elective class in which a primary palliative operation on the kidney was done as it was considered less dangerous than nephrectomy,

and the second class being made up of cases in which it was not the operator's intention to do a secondary nephrectomy, but he was obliged to do so either by chance or by an error in diagnosis or judgment.

The author analyzes 20 personal cases. Of these, 9 belonged to the first class. Seven of the 9 were cases of pyonephrosis in adults in which a two-stage removal of the kidney seemed as necessary as a two-stage operation in some prostatic cases. The two others were cases of hydronephrosis in children not operated on primarily by the author.

Eleven of the cases fell in the second class. Four were cases of nephrolithiasis with persistent urinary sinus, 1, a case of infarct; 1, a case in which a plastic operation for hydronephrosis was followed by poor drainage and infection; and 1, a case of hypernephroma in which a previous attempt at removal had been checked by severe hemorrhage.

In the 20 cases there were 2 deaths. One fatal case was a case of hydronephrosis in the first class complicated by general tuberculosis, and the other, the case of hypernephroma in the second class.

The author discusses the operative complications in secondary nephrectomy, the value of an elliptical incision around the old scar, his method of preventing leakage from urinary sinuses during the operation, and the difficulty of separating adhesions, especially about the pedicle.

H L SANFORD

Kolischer, G., and Eisenstaedt, J. S.: Notes on Ureteral Stone. *J. Michigan State M. Soc.*, 1920, xiv, 189.

The original diagnosis of ureteral stone was symptomatic. Ureteral catheterization with the shadowgraph catheter and the X-ray have placed the diagnosis definitely on a firm basis.

If, when the ureteral orifice is so swollen that a catheter will not pass, pictures made with the bladder distended with air or water show the shadow of the orifice within the shadow of the ureter.

If the orifice protrudes into the bladder transillumination with the cystoscope lamp in the fundus may show the shadow of a stone just above the orifice. If the ureteral mucosa is prolapsed into the bladder it is differentiated from a ureteral cyst by its increase in size when the urine is expelled and the emanation of the urinary whirl from its center.

Impacted ureteral stones in the upper third are best removed by way of the kidney pelvis. Ureterotomy is justly condemned. Impacted stones in the intravesical part of the ureter may be removed with the operating cystoscope. If that is impossible because of hemorrhage or marked inflammation, suprapubic opening with direct exposure of the trigone is the method of choice. In the latter case the orifice is incised and the stone extracted with a pair of fine forceps. The incised orifice is not sewed up but oozing can be controlled with the galvanocautery. The suprapubic wound is closed without drainage.

C D PICKRELL.

Except in cases of small bladder wounds without symptoms of complications and those in which the circumstances of time and place hinder operation, the treatment of extraperitoneal bladder injuries is usually surgical.

In cases of intraperitoneal wounds of the bladder a laparotomy should always be done to discover the associated injuries, to repair perforations in the intestine, etc., prevent hæmorrhage, check the flow of urine into the peritoneal cavity, and effect drainage.

When during expectant treatment with the use of a retention catheter and opening up of the track of the wound there is dangerous suppuration operation should be done immediately.

Suprapubic cystotomy is the operation of choice in extraperitoneal lesions whenever the presence of grave lesions in the inferior quadrants is suspected, the projectile is retained, rectal symptoms develop, or there is persistent hæmorrhage. The operation is indicated secondarily when the catheter has been found insufficient. In addition to its diagnostic and curative value this operation is of advantage in that it usually prevents complications.

When there are simultaneous extraperitoneal lesions of the rectum and bladder a suprapubic cystotomy supplemented by other suitable operations (incision of the sphincter, the formation of an iliac anus, etc.) prevents retention of feces and pollution of the wound track and bladder.

Because of the danger of infection fractures of the pelvic bones, which are common complications of bladder wounds, may be followed by a severe osteomyelitis. When the fracture is comminuted, an opportune opening

they open toward the bladder a severe and rebellious cystitis and the formation of calculi usually result. The latter may be expelled spontaneously or may require operative removal.

Phlegmons due to bladder lesions, commonly localized in the prevesical and retrovesical space, often invade the perivesical space and infiltrate the

should be made in the lower quadrants of the abdomen parallel to the recti muscles.

Bladder wounds running a complicated course and in which the projectile is retained or calculi are formed should be subjected to periodical radiographic and cystoscopic examinations in order that the passage of other metallic or bony particles into the bladder may be prevented and the formation of fistulae opening into the bladder discovered.

Wounds with retention of projectiles in the perivesical space should be kept under observation for a long period and if pain or other vesical symptoms arise the possibility of the entrance of the projectile into the bladder should be taken into consideration.

W A BRENNAN

GENITAL ORGANS

Marion, G.: The Significance of the Chronic Vesiculitis of Prostatic Conditions (*De la signification des vésiculites chroniques chez les prostatiques*) *J d'urolog. et chir.*, 1920, ix, 11

Marion gives the clinical histories of three patients with symptoms of dysuria of prostatic origin and vesiculitis. The prostatic lesion in every instance was a neoplasm.

It was formerly believed that a prostatic neoplasm is a bilateral prolongation characterized by neoplastic induration of the vesicular regions, the latter being an extension of the neoplastic process in the prostate. If this assumption is true operation is contra-indicated, but if the vesicular condition is simply a retrograde dilatation of the seminal vesicles the neoplastic prostate may be removed.

The presence of vesicles which are augmented in volume is of very great diagnostic significance. If these are found in a patient showing distinct symptoms of prostatism, it suggests prostatic cancer. A similar vesiculitis occurs in chronic prostatitis, but in such cases the syndrome of prostatism is absent.

In the three cases of chronic vesiculitis reported in this article the vesicular lesions could not be attributed to the prostatic condition as the neoplasm was still limited to the prostate. Marion therefore concludes that a unilateral or bilateral vesicular induration indicates the presence of a neoplasm in the prostate, but is not a prolongation of the neoplasm and, at least in certain cases, does not contra-indicate operation. The removal should be similar to that of a hypertrophied prostate by the suprapubic route.

As a rule prostatic cancers recur in from six months to two years. In the author's cases the operation has been supplemented by the application of radium but was done too recently to warrant conclusions as to the end-results.

The removal of the seminal vesicles does not affect the prognosis of the prostatectomy.

W. A. BRENNAN.

Player, L. P., and Mathé, G. E.: Clinical Observation and Treatment of 134 Cases of Chronic Prostatitis. *California State J. M.*, 1910, xvii, 152

The conclusions based on the study of 134 cases of chronic prostatitis are as follows:

1. In the treatment of chronic prostatitis a careful history must be taken, a thorough examination made, and the patient placed under one of a number of routine methods of treatment intended to meet the pathologic condition present and others that may arise.

2. When the patient has had gonorrhœa, two or more massages are necessary before a negative report can be given. In many cases in which a normal secretion is obtained on the first massage a pathologic condition is indicated by that of the second or third massage.

through a wide incision. The patient is placed in the Trendelenburg position after the enucleation, and stay sutures are put in each lip of the bladder wound. Bladder retractors are inserted and the field of operation is inspected. Arterial bleeding, which often comes from an artery situated in the posterior free edge of the bladder mucosa, may be controlled by a stitch ligature. Venous bleeding is checked by gauze packing. In one case the author pushed the wall of the bladder away from the symphysis pubis and ligated the main branch of the prostatic plexus to control extensive venous oozing.

Strips of mucous membrane and nodules of prostatic tissue are removed and the posterior fold is incised in order to prevent narrowing of the vesicoprostatic opening.

Free drainage is employed and the bladder closed by interrupted catgut sutures. A J SCHOLL, JR

Dillon, J. R., and Blaisdell, F. E.: *The Surgical Pathology of the Seminal Vesicles. California State J. M.*, 1920, xviii, 149.

In the prophylaxis and treatment of the seminal vesicles it is highly important to have in mind the structural changes which may involve them during the various stages of an urethritis.

In studying the pathology of sections obtained from different cases at operation and comparing them with the clinical manifestations before and after operation the authors found that simple drainage is not always sufficient to accomplish the purpose of the operation and may account for many of the unsatisfactory results of vesiculotomy.

There are two distinct pathologic changes first, those involving the intrinsic structures, and second, those involving the extrinsic processes. The authors classify the conditions into the following four types: (1) those in which neither the intrinsic nor the extrinsic changes are macroscopically evident; (2) those in which only the extrinsic changes are macroscopically evident; (3) those in which only the intrinsic changes are macroscopically evident; and (4) those in which both the intrinsic and extrinsic changes are macroscopically evident.

In Types 1 and 2 the results of vesiculotomy were uniformly good in the cases studied. In Type 3 the condition was greatly benefited when the vesicles were excised and only slightly improved, if improved at all, when they were drained. In Type 4 the results of drainage were uniformly poor. Patients who claim that their rheumatism is always relieved for a day or two following intercourse are affected with a condition belonging to Types 1 or 2. Some patients state that ejaculations during intercourse produce a diminished amount of semen and it is in these cases that the authors find gonorrheal rheumatism, impotence, and neurasthenia most resistant to treatment. In such instances the best results are obtained by draining or removing the vesicles.

As yet the authors have no data as to the effect of vesiculotomy and vesiculectomy on sterility. They have found, however, that they do not exert an ill effect on the sexual capacity and in many cases are followed by improvement. Louis Gross

cludes daily massage beginning forty-eight hours after the operation, when the tension is not subnormal, to assist in the formation of a filtering cicatrix.

In secondary glaucoma with iritis the hypertension usually subsides spontaneously, but in some cases a paracentesis may be necessary. In other cases of secondary glaucoma Weeks sometimes does a trephination and sometimes an iridectomy.

T. D. ALLEN.

EAR

Gray, A. A.: On Some Anatomical Features of the Vestibule Not Previously Recorded. *Proc Roy Soc. Med*, Lond., 1920, xiii, Sect. Otol., 17.

Gray draws attention to the fact that the footplate of the stapes and the adjacent tissue in the immediate vicinity of the oval window are not composed entirely of bony tissue in the ordinary sense, but contain a mixture of bone and cartilage. While the cartilaginous element in the footplate of the stapes has long been recognized, Gray does not believe there has ever been a description of the cartilaginous element in the adjacent walls of the vestibule.

In the portion lying above and below the footplate the band has a diameter equal to about one-third of that of the footplate itself in its small diameter but at the anterior and posterior regions the band is usually considerably broader. It is narrowest opposite the posterior third of the lower margin of the oval window and next narrowest at a corresponding point near the upper margin of the oval window. Thus it is narrow at points opposite one another on the two horizontal walls of the oval window, near the juncture of these middle and posterior thirds.

As regards the general significance of this cartilaginous element, Gray is of the opinion that it is doubtless a remnant of the original fetal cartilaginous capsule of the labyrinth in which the bony capsule develops later on.

Another detail is the deep cleft which passes forward and downward from the anterior margin of the oval window, and still another, the small foramen found in the outer wall of the vestibule immediately behind the posterior margin of the oval window.

In the cadaveric position of the footplate of the stapes the posterior third of the footplate is rotated inward and the anterior two-thirds outward. From this evidence it appears probable that either at the moment of death, or else during rigor mortis, the stapedius muscle undergoes contraction and causes a rotation of the stapes round a vertical axis which passes through the footplate at the juncture of the middle and posterior thirds. According to the evidence, therefore, the function of the stapedius muscle in man is to draw the anterior two-thirds of the bone outward from the vestibule and at the same time to drive the posterior third inward.

Inasmuch as the layer of cartilage is no more abundant in front of the oval window (where the otosclerotic process usually begins) than behind it, Gray does not believe the presence of cartilage in the wall of the vestibule surrounding the footplate of the stapes has any bearing on the pathogenesis of otosclerosis.

O. M. RORR

Marks, H. J.: Labyrinthine Complications in Middle Ear Suppurations. *Med J Australia*, 1920, i, 429.

The author recognizes and describes four types of labyrinthitis: (1) diffuse purulent manifest labyrinthitis, subacute labyrinthitis, (2) diffuse purulent latent, (3) circumscribed; and (4) diffuse serous induced and secondary.

In considering the indications for operation the following factors should be taken into consideration: (1) the syndrome causing the labyrinthine trouble; (2) the character of the disease, (3) the direct or indirect anatomical findings on the inner tympanic wall before, and in the area involved during, the mastoid operation; and (4) the tendency toward intracranial extension or the presence of signs of an intracranial complication.

Clinical notes of six cases are given: Case 1, sudden labyrinthine destruction after the removal of an aural polypus; Case 2, diffuse induced labyrinthitis supervening on acute suppurative mastoiditis and the presence of pus around the lateral sinus in chronic middle-ear suppuration with cholesteatoma; Case 3, circumscribed labyrinthitis with a fistula in the horizontal canal; Case 4, attic suppuration and cholesteatoma with symptoms of fistula; Case 5, circumscribed labyrinthitis with polypus in the region of the foramen ovale, acute diffuse suppurative labyrinthitis supervening three days after a radical mastoid operation; spontaneous rupture of the pus through the foramen ovale, Case 6, rupture of the the labyrinthine capsule by the removal of a polypus in old chronic purulent otitis media; acute diffuse, serous, and purulent labyrinthitis supervening on the eighteenth day after a radical mastoid operation.

O. M. RORR

Fraser, J. S., and Dickie, J. K. M.: Meningitic Neurolabyrinthitis. *Proc Roy. Soc. Med*, Lond., 1920, xiii, Sect. Otol., 23.

Meningitic neurolabyrinthitis is a frequent cause of deafness and deaf-mutism.

Deafness caused by epidemic cerebrospinal meningitis is certainly due to meningitic neurolabyrinthitis.

Measles and pneumonia may be followed by meningitis and secondary neurolabyrinthitis. In acquired syphilis and in mumps leptomeningitis is of common occurrence and associated with inner ear deafness which is probably due to neuritis or neurolabyrinthitis. No microscopic examination, however, has been made as yet. Certain cases of deafness following influenza and osteomyelitis also may be of meningitic origin.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Oppenheimer, S.: The Surgical Correction of the Aquiline or Hump Nose. *Am J. Surg.*, 1920
XXIV, 122

In the operative procedure described the tip of the nose is elevated and by means of a small scalpel a short semicircular incision is made in the anterolateral portion of the nasal vestibule, just below the point of juncture between the lateral cartilages and the nasal bone. Through this incision small blunt-pointed scissors or blunt dissectors of the Freer type are introduced between the nasal bone and the overlying integument and the skin over the dorsum of the nose is thoroughly undermined. The

moderate size the undermining may be accomplished satisfactorily through an incision in one vestibule, usually the left, but if necessary a similar intranasal incision may be made also through the other vestibule.

The hump is removed with a small saw, scissors, or rasp introduced through the incision. Usually the rasp is found very satisfactory. With a forward and downward motion paralleling the nasal ridge the anterior borders of the nasal bones are trimmed down until the hump is obliterated to a sufficient degree. When the base from which the hump is removed appears to be very broad and sharp,

a small drainage strips are inserted through the primary intranasal incisions and carried well up on the dorsum of the nose. These strips are allowed to remain *in situ* for three or four days or longer if deemed desirable. The nostrils are lightly packed with petrolatum gauze or bismuth petrolatum gauze. Local inflammatory reaction is checked by the prompt application of iced compresses locally, but in many cases it is remarkable how little local reaction is aroused. A splint of dental compound molded to fit the patient's nose and held in place by adhesive strips affords excellent protection against injury.

The following day the nasal packing is removed and the nose cleansed of clot and secretion with a warm nasal douche. Inhalation of medicated steam vapor is of value in the reduction of the swollen tissues. Under this treatment the nasal structures return to a very normal appearance in a fairly short time, but the patient is warned that it may be several months before all trace of inflammatory reaction and thickening of the tissues disappears and

the full cosmetic benefit of the operation is obtained. Photographs or plaster casts made before and after the operation are important in all cases.

When the hump is so exaggerated that virtually the entire nose from the frontal notch to the tip is oversized a more extensive undermining of the skin is necessary than when the operation is done merely to remove a bump. In such cases the undermining extends from the frontal eminence to the nasal tip and over the nasal processes of the superior maxilla where the nasal base is also to be narrowed.

In the reduction of the height of the nose the operative area is undermined, the nasal bones are sawed through from above, at the frontal notch, downward, and the required amount of bony dorsum is removed. The cartilaginous portion is then trimmed with the scalpel in a similar manner and the detached tissue is removed through the intranasal incision. When in this procedure an opening is made into the nasal chambers no ill effects appear to ensue, but some authorities caution against it.

After the reduction of the height of the dorsum of nose the length and width may appear increased and the lobule is brought into greater prominence than before. If it appears desirable to reduce the width of the nasal base, this is accomplished by sawing through the two nasal processes at their juncture with the superior maxilla, the periosteum being first separated with an elevator. The lower edges are then made to approach the midline of the nose by pressure of the thumb and index finger, and the nasal bones are fractured at the nasofrontal juncture. When necessary to bring about a sufficient degree of mobility of the nasal processes and nasal bones, they are seized with forceps such as the Adam's forceps, one blade being inserted through the incision and the other into the nasal vestibule.

When the lessened height of the dorsum makes the top of the nose seem broader and flatter than is desired, the condition is remedied by slanting the superior edges of the nasal bones inward toward the median line.

In case the whole nose is too long, it is shortened by resecting a triangular piece of the cartilaginous septum which is taken horizontally from its inferior border with the inclusion of a part of the membranous septum beneath it. The base of this triangular septal resection, which is from 3 to 5 mm. wide, is placed anteriorly just beneath the nasal tip and the apex is placed at the inferior nasal spine. The septal incision is made with a straight scalpel. After the triangular piece of septum including the mucosa on both sides is removed, the tip and columns are attached by suture to the freshly formed inferior margin of the triangular cartilage. This elevates the nasal tip and makes the septum shorter. If it is